

UNIVERSAL
LIBRARY



119 963

UNIVERSAL
LIBRARY

FROM MIDSHIPMAN
TO REAR-ADMIRAL



Table 1. 20. Bradley A. Fiske.

Bradley A. Fiske.

FROM MIDSHIPMAN TO REAR-ADMIRAL

BY

REAR-ADMIRAL BRADLEY A. FISKE

U. S. NAVY

Former Aid for Operations of the Fleet, President of the U. S. Naval
Institute, Gold Medalist of the U. S. Naval Institute,
the Franklin Institute of Pennsylvania, and
the Aero Club of America.

Author of "Electricity in Theory and Practice," "War Time in
Manila," "The Navy as a Fighting Machine," etc.

Inventor of the Gun Director System, the Naval Telescope Sight, the
Stadiometer, the Turret Range Finder, the Horizometer,
the Torpedoplane, etc., etc., etc.

ILLUSTRATED WITH
PHOTOGRAPHS



NEW YORK
THE CENTURY CO.

1919

Copyright, 1919, by

THE CENTURY CO.

Published, September, 1919

TO
THE MEMORY OF
REAR-ADMIRAL STEPHEN B. LUCE
U. S. NAVY
WHO SAW THE LIGHT BEFORE OTHERS SAW IT,
AND LED THE NAVIES TOWARD IT

PREFACE

No other vocation gives a man such exciting and varied experiences as the navy. These experiences are caused mainly by the continual recurrence of danger in many forms; the frequent changes of locality, scene, climate and companions; the blending of the military with the nautical career; the combination of diplomatic and war-like responsibilities; the handling of engines and mechanisms of all kinds; the conduct of tactical and strategic operations; and the continuous battle against the political influences that sap the strength of the nation.

During the last forty-nine years navies have increased more than a hundredfold in power; that is, in the amount of destructive power they can exert. This has been accomplished by utilizing the mechanical power of steam, electricity, gunpowder, and explosives, and by inventing instruments and methods with which to direct the mechanical power accurately at its objective.

During all the time in which this increase in naval power was being accomplished I had the good fortune not only to be a close observer, but to contribute some essential parts. In fact, it has often been said to me that I did more to increase the power of navies than any other one man.

I realize that I am exposing myself to the charge of insubordination by relating certain incidents that occurred while I was aid for operations and afterwards. But the Secretary's official statements about me before the House Naval Committee on April 3, 1916, and especially his statement, "If the law had not . . . provided a chief of operations instead of an aid for operations,

I should have asked him (me) to retire, (as aid for operations) because he (I) was not in harmony with the Department," added to the fact that after I had so retired and throughout the war, the handling of the navy was satisfactory to the country, have caused an impression more or less widespread that I had been an obstruction to progress. Navy officers know that this is the exact reverse of the truth, and that I was "not in harmony with the Department," *because* I continually urged certain measures of preparedness. They also know that these measures were afterwards adopted, and that it was *because* they were adopted that the navy was well prepared for the war and well handled during the war.

I owe it to myself, to my family, and to the navy to state the exact facts of the case, and with such fullness as the small limits of a book permit. This I do.

BRADLEY A. FISKE.

New York, August 1, 1919.

CONTENTS

CHAPTER	PAGE
I BOYHOOD	3
II THE NAVAL ACADEMY	8
III THE MIDSHIPMAN CRUISE—KALAKAUA AND THE SANDWICH ISLANDS	20
IV EXAMINATION, TYPE-WRITER AND BOAT DETACH- ING APPARATUS	37
V N. Y. NAVY-YARD, COLORADO, ELECTRIC LOG AND POWHATAN	46
VI LEAD-PENCIL, TALLAPOOSA, SARATOGA, MARRIAGE	60
VII BUREAU OF ORDNANCE AND FRANKLIN INSTI- TUTE ELEC. EXPOSITION	78
VIII CRUISING IN THE ATLANTA	96
IX THE VESUVIUS, MY RANGE-FINDER AND GUN- DIRECTOR	111
X LONDON, PARIS AND LE FORMIDABLE	133
XI SPEZZIA, IL TERRIBILE, AND CAP BRUN	145
XII CRUISING IN THE ATLANTIC AND PACIFIC OCEANS AND THE BERING SEA	161
XIII CRUISING IN THE SAN FRANCISCO. WAR IN BRAZIL	186
XIV ELECTRIC TURRET-TURNING MECHANISM, STAD- IMETER AND OTHER INVENTIONS	198
XV ON THE CHINA STATION	223
XVI THE BATTLE OF MANILA	241
XVII AFTER THE BATTLE	257
XVIII THE CAPTURE OF MANILA CITY	275
XIX HONG-KONG, TAKU, SHANGHAI, AND A GALE OF WIND	283
XX OUTBREAK OF THE FILIPINO WAR	293
XXI ADVENTURES IN A MONITOR	306
XXII ADVENTURES IN THE YORKTOWN	317
XXIII SHORE DUTY, TORPEDOES, SEMAPHORE AND TEL- ESCOPE-MOUNT	339
XXIV EXECUTIVE OFFICER OF A BATTLE-SHIP	348
XXV TURRET RANGE-FINDER, FOUR-ARM SEMAPHORE AND PRIZE ESSAY	358

CHAPTER	PAGE
XXVI	COMMANDING THE MINNEAPOLIS 379
XXVII	COMMANDING A MONITOR 396
XXVIII	TURRET RANGE-FINDER, HORIZOMETER, "COUR- AGE, AND PRUDENCE" 406
XXIX	THE CAPTAIN'S CRUISE—FIRST YEAR 417
XXX	THE CAPTAIN'S CRUISE—SECOND YEAR 443
XXXI	THE GENERAL BOARD, AERONAUTICS, AND "NA- VAL POWER" 476
XXXII	COMMANDING THE FIFTH DIVISION 493
XXXIII	COMMANDING THE THIRD AND THE FIRST DI- VISION. END OF SEA CAREER 507
XXXIV	AID FOR OPERATIONS, AERONAUTICS AND OUT- BREAK OF WAR 526
XXXV	THE UNPREPAREDNESS OF THE NAVY 546
XXXVI	TESTIMONY BEFORE CONGRESS AND CHIEF OF NAVAL OPERATIONS 561
XXXVII	WAR GAME, THE ADMINISTRATIVE PLAN, AND MY RESIGNATION 572
XXXVIII	"THE MASTERY OF THE WORLD," "NAVAL PRE- PAREDNESS" AND MY REPRIMAND 590
XXXIX	MY SECOND TESTIMONY AND THE SECRETARY'S ATTACK ON ME 598
XL	UNPREPAREDNESS LETTER, LETTER OF PRESIDENT, AND RETIREMENT 610
XLI	WAR CLOSE AT HAND 620
XLII	THE UNITED STATES DECLARES WAR AGAINST GERMANY 632
XLIII	AERONAUTICS IN WAR 642
XLIV	REJECTION OF THE TORPEDOPLANE WITHOUT TRIAL 660
XLV	THE TRIUMPH OF THE TORPEDOPLANE, FUTURE GLORY OF AMERICA, GOLD MEDAL 677
	INDEX 689

LIST OF ILLUSTRATIONS

Bradley A. Fiske	<i>Frontispiece</i>
U. S. S. <i>Saratoga</i>	FACING PAGE 64
Rear-Admiral S. B. Luce	104
Rear-Admiral A. T. Mahan	108
Gun practice on board a man-o'-war before the introduction of the telescope sight	176
Battle of Manila	248
U. S. S. <i>Minneapolis</i>	380
U. S. S. <i>Arkansas</i>	400
Admiral George Dewey	480
U. S. S. <i>Florida</i>	520
Lieutenant-Commander W. P. Cronan	556
Captain Zachariah H. Madison	564
Land Battleship	596
A torpedo being launched from a torpedoplane	680

**FROM MIDSHIPMAN
TO REAR-ADMIRAL**

FROM MIDSHIPMAN TO REAR-ADMIRAL

CHAPTER I

BOYHOOD

I WAS born in Lyons, New York, on June 13, 1854. My father was the Rev. William Allen Fiske of the Episcopal Church. He was a very handsome man, a fact which the ladies of his congregations never permitted him to forget. He was vain of his handsomeness, but I think that was the only fault his magnanimous soul possessed. The main object of his life was to do something for some one else, especially for some one who was poor or sick. He was much interested in my progress through the navy; but his interest was not so much in my promotion or in my getting assignments to pleasant stations, as in my conduct and in the way in which I was regarded by my brother-officers.

My mother was the daughter of Colonel John Bradley, who had resigned from the army when he was a captain, and who became later a colonel on the staff of the Governor of New York. She was a woman of great force of character, and she always had extraordinary influence over me. From the time when I began to go to school until she died the mainspring of all my ambitions was to please her. As a boy I took the greatest pleasure in her companionship, and we always read books together. During all the periods when I was separated from her I wrote to her every Sunday. At the end of May 1, 1898, after the Battle of Manila, I remembered, just as I was going to turn in, that it was Sunday, and I had not written to her. So I sat down at once and wrote to her.

4 FROM MIDSHIPMAN TO REAR-ADMIRAL

The first thing I remember clearly is being in a train that was going somewhere. I seem to have been going somewhere during a great part of my life ever since. On the first occasion that I remember I was going with my father and mother and little sister from Lyons to Cleveland, Ohio. My father had been called to the rectorship of Grace Church, Cleveland.

We lived in Cleveland from January, 1860, to January, 1866, and I have always remembered Cleveland with the greatest pleasure. It was called the Forest City, and the people declared it the most beautiful city in the United States. This was before the prosperity of Cleveland set in, and covered the city with smoke and dirt. Euclid Avenue was especially beautiful. One side of the avenue was lined with magnificent residences, and the other with residences of the plainer kind. One side was called the "nabob side," and the other side was called the "bob side." We lived on the bob side.

During the first year that we were in Cleveland I went to a private school, which was a sort of a military school, in which the boys were organized into a company, wore a uniform, and were called the Anderson Cadets. I was the smallest boy in the company, and carried a wooden gun. The other boys carried real guns. The head of the school, Mr. Stevenson, was an Englishman, and so he tried to teach us foot-ball. I took part in one game. As I recollect it, my participation in the game lasted about a minute. I do not remember anything after this, until I was picked up from the ground and led off the field, crying. The ball had struck me in the face, and knocked me down so hard that my head struck the ground before any other part of me did.

Mr. Stevenson's wife was a German, and was his assistant in his school. She was an excellent teacher so far as thoroughness and knowledge were concerned; and though her methods were far from gentle, and all the boys were afraid of her, we had a good deal of respect for her. One evening when she and Mr. Stevenson were

calling on the minister and his wife, and we were sitting in my father's study, I tried to open a drawer in his desk by means of my little finger inserted in the keyhole, but gave up the attempt. Seeing this, Mrs. Stevenson exclaimed:

"Why did you pull out your finger without doing what you started to do?"

"It hurt," I said.

"What if it did hurt?" she exclaimed. "*You'll never amount to anything if you are afraid to do things that hurt.*" I think she was right.

My mother's brother was a midshipman at the Naval Academy at Annapolis when we went to Cleveland. Shortly afterward he visited us, and I was so carried away with the splendor of his uniform and the stories he told me about his naval life that I determined to be a naval officer and to prepare myself for the Naval Academy. This was a fortunate thing for my parents, because it made it easy for them to get me to do anything, or not to do anything, as they might wish. If I did not learn my lessons well, they would say I would never get into the Naval Academy; if I showed a tendency to be babyish or lazy, they would say I would never make a good naval officer, etc.

Not very long after my uncle's visit I remember being in a carriage with my mother and another lady, and that they both began to cry after some man had looked into the carriage-window and told them something. I did not understand what it was at the time, but I found out later that what he told them was that Fort Sumter had been fired on. They knew, of course, that this meant war between the North and the South. About a year after this I remember a telegram being handed to my mother from her father, which read, "Our brave John fell while nobly performing his duty." He was killed on board the U. S. Ship *Richmond* while passing the forts below New Orleans. He was aid to Captain Alden, and was standing on the bridge with his hand to his cap in military

6 FROM MIDSHIPMAN TO REAR-ADMIRAL

salute, when he was struck with a bullet in the forehead. My mother was never quite the same afterward.

My father was called to the rectorship of St. Paul's Church, Cincinnati, Ohio, in the latter part of 1865, and we went there in the early part of 1866. Cincinnati in those days was very much larger than Cleveland, but it was not nearly so pleasant a place for a boy to live in. It was too large for boys' games, because there were so many people in the streets; playing ball and shinny was very difficult, and so was snowballing in the winter time.

The last three years of my life in Cincinnati I spent at Hughes High School; I believe that during the last year Mr. Taft was at Woodward High School. These two high schools were great rivals, each one considering itself better than the other.

I remember one day at dinner that my father said that a friend of his had made an invention. In reply to a question of mine, he explained what an invention was. It seemed to me a very splendid thing, and so after dinner I sat by the window in the parlor and tried to invent something. But after trying for about half an hour, I gave up the attempt, because I came to the conclusion that everything had been invented already.

Sometime after this, while I was supposed to be listening to one of my father's sermons, but was really thinking about Robinson Crusoe's difficulties in getting fresh water, an idea occurred to me with startling force, that if he had boiled some salt water and let the steam rise up under an inverted tin cone, which had a gutter turned up on the inside, around the bottom, the steam would have condensed on the tin and run down as water into the gutter, and Robinson Crusoe could have drawn it off later. I could not get rid of the idea for a long while; I made pictures of it, and talked to people about it, but it finally faded out of my mind. Of course my idea was in substance the same as that of all modern methods of evaporating salt water. One thing that drove it out of my mind was another idea, which was for improving

sleeve-buttons. The sleeve-buttons I wore were so made that to put them into my cuffs, or take them out, was difficult; and I got up a sleeve-button which was in two pieces, one put in at the top of the buttonholes and the other at the bottom, and the two parts then clamped together. The so-called "separable sleeve-button," which was the same thing, came out about ten years afterward, and had a great vogue during many years.

During all the years in Cleveland and Cincinnati that followed my uncle's visit I kept the Naval Academy constantly before my eyes. But as the time approached at which, if at all, I could get an appointment, the difficulties of securing an appointment became gradually so clear as to indicate that I probably could not get one. The only two alternatives I considered were the ministry and the law, with a slight inclination toward the law, but a feeling that in the end I would probably go into the ministry. However, through his friend, the Hon. George H. Pendleton, who was a vestryman in his church, my father secured from the Hon. P. W. Strader a promise that, in case he got elected, I should receive the appointment. Strader was declared elected, but the election was disputed. When the time came to make the appointment, the election had not been decided, but Strader gave me the appointment, nevertheless. So I went to Annapolis with my mother, and presented myself for examination.

I had little doubt that I could pass the mental examination, but I did not believe that I could pass the physical, and neither did my mother. I had always been a delicate child, and I had tried to increase my strength by gymnasium exercises. I overexerted myself at these, and the family doctor, who afterward became the highly distinguished Dr. Barthalow, told my parents that I must stop them, and that I had already injured my heart. The navy doctors examined me carefully, however, and to my intense joy passed me.

10 FROM MIDSHIPMAN TO REAR-ADMIRAL

ally patronized. The hazing was done by the third class, the class immediately above; but it had the approval of the entire academy and the not very great opposition of the officers, although the latter tried to prevent acts of a cruel or insulting character. As Jim Fiske's name was known by everybody in the United States at that time, I was immediately labeled "Jim Fiske." The name has stuck to me among my classmates and naval friends ever since. The different members of the class were hazed in different ways. For some reason I got off very easily; all I had to do was to strike an attitude and assume an expression of face supposed to be that of an idiot. Whenever a third classman met me he would say, "Jim Fiske, strike your attitude," and I would immediately personify an idiot as best I could. My room-mate was hazed a good deal; for some reason the third classmen liked to haze him. Various indignities of a minor kind were heaped upon him. For instance, every day when he went out of the mess-hall at half past one, after dinner, he was met by a third classman named Upshur, who would say to him:

"Good afternoon, Mr. Craig."

Craig would say:

"Good afternoon, sir."

"How do you feel, Mr. Craig?"

"Pretty well, thank you."

"Why, Mr. Craig, you don't look at all well. You had better go to bed. You go upstairs and undress and go to bed, and I'll be up there in a few minutes and count your pulse."

So Craig would have to go to bed and get entirely undressed. In a few minutes Upshur would come in and feel his pulse. Then he would say:

"You seem to be a good deal better now, Mr. Craig; you may get up."

The hazing kept up for two or three months, until finally, one Sunday afternoon, something precipitated a fight between the two classes. I do not remember what

the circumstance was, but it happened on the plebe-class floor. Hurry-up calls were sent out for reinforcements, and in a few minutes the greater part of both classes were engaged in a rough-and-tumble fight. As the plebes were more than twice the third class in number, and only a year younger in average age, the result was a complete triumph for the plebes. The third class acknowledged this straightforwardly, and agreed to stop the hazing at once. This elevated tremendously our standing—a standing which we had achieved by force of arms. But of course we were still plebes, and had to say “sir” to all the upper classmen, to show due humility toward them in all ways, and to realize that, despite our valor on the field of battle, we were really a despicable lot.

The semiannual examination resulted in “bilging” more than half the class. The unfortunates had to resign and go home, leaving only about fifty in the class.

We were very busily occupied indeed. We were aroused by the reveille of drum and fife at half past six in the winter months, and at six at other times. From then until ten o'clock at night we did all things in obedience to bugle-calls at stated times. Recitations, study hours, meals, and drills followed one another in precise succession, the only leisure in the day-time being from about five until half past six, between afternoon drill and supper-time. The evenings were spent in study until half past nine. From half past nine until ten the members of each class were free to roam about the corridors of their own floor; but at ten o'clock all lights had to be out, and every man must be in bed. Then the superintendent of the floor would go to each room to see if both occupants were in bed, in which case he would say, “Good night.” The occupants of each bed would say, “Good night, sir,” and then the superintendent would go out and close the door.

The annual examinations, in the latter part of May, closed the academic year. In my class I was posted number one at first; but some subsequent calculations, which I

12 FROM MIDSHIPMAN TO REAR-ADMIRAL

have never quite understood, based on the fact that certain other midshipmen failed to pass, made Weggman number one and me number two.

We started on our practice cruise in the early part of June, and came back to Annapolis in the latter part of September. We were on the cruise nearly four months, and it was the most unpleasant four months I have ever experienced. We were embarked in two ships, the old *Constellation*, famous from the War of 1798, and the *Saratoga*. The *Saratoga* was much the smaller of the two, and I was one of the sixty midshipmen in the *Saratoga*. We slept in hammocks, a thing of which I did not at all approve, for the reason that I would have nightmare about once in three nights. One has to lie on his back for the most part in a hammock, because he cannot lie out straight; and if one has any tendency toward nightmare, the hammock aggravates it greatly. The nightmares that I suffered while sleeping doubled up on my back in my hammock were sometimes quite distressing. One night I found myself lying on the deck, very much bewildered, and two of my classmates kneeling by me. They said I had held the sheet up in front of my face, and had apparently become very much frightened at it, and then had thrown myself out of my hammock, screaming.

In port we had to get up at five o'clock in the morning and entertain ourselves as best we could on the wet decks, which were being scrubbed down, until eight o'clock, when we had breakfast. We had three meals a day, but the only thing on the bill of fare that I can remember was dried apples. I think we had them for every meal, but I may be wrong about that. I remember very clearly, however, that when we were nearly out of dried apples, we went into some port, and the paymaster went ashore to get more provisions. The midshipmen had to haul on the ropes which hoisted the new provisions on board, and we watched with intense interest the marks on the barrels to see what they contained. All contained dried apples.

The sixty midshipmen had a wash-room away forward

on the berth-deck, which had nine stationary wash-basins. There was no ventilation, and I remember sixty more or less seasick midshipmen trying to wash themselves in nine wash-basins, and not making any very determined efforts to keep good humored. The experience was very good, doubtless, but none of us has ever looked back on it with pleasure. At sea we had to stand watches both night and day, and we had nothing to eat after our supper of dried apples at five o'clock until eight o'clock the next morning. During the early part of the cruise, before we got over being seasick, we spent most of our time lying on the spar-deck in attitudes of dejection, varied by trips to the lee side to relieve our stomachic disquietude, and by jeers at our comrades when they were making these trips. We had study hours and recitations every day. I remember that we were called by the bugle, and that the tune was "Not for Joe." We had to haul on the big ropes that moved the sails and yards, alongside of the colored servants, and the officer of the deck would call out to us continually, "Haul away, gentlemen."

No vessel like the *Saratoga* now sails the seas. There are sailing ships, of course, still on the ocean, but they are very different from the *Saratoga*. The *Saratoga* was a man-of-war in the same sense that the proudest battleship is now, and her routine was carried on with just as much rigor and precision. The man-of-warsman of that day has also passed away, and so in a less degree has the naval officer of that day. Although the ships carried guns, and although it was realized that the guns were the things which would decide, and always had decided battles, yet the gunnery of that day was so simple, in comparison with the seamanship of that day, that a naval officer's reputation depended almost wholly on his ability in handling ships under sail. The amount of time devoted to gunnery drills was not more than an hour a day on the average, and usually much less, while the whole time at sea had to be devoted to the handling of the ship.

The *Saratoga* and the *Constellation* had no steam

14 FROM MIDSHIPMAN TO REAR-ADMIRAL

power; they depended wholly on their sails for their propulsion. A few of the cruising ships of the navy had steam power; but captains ordinarily used it for going into and out of port only, and did virtually all of their cruising under sail. This condition continued until after 1890, though with a gradually increasing tendency to discard sails. Yet every naval battle of the Civil War, even that between the *Kearsarge* and the *Alabama*, had been fought under steam alone! The reversion of the navy to sail power after the Civil War would seem an amazing thing, did we not realize that a profound conviction settled upon the people of the United States after that war that it would be the last war, and that the only use for the navy was to "show the flag" in foreign ports.

The two "practice ships" went back to Annapolis just before the first of October, when the new academic year began. We were all delighted to get ashore, and I have never had such a feeling of enjoying real luxury as when I then stretched myself out in a flat bed in a quiet room.

The next academic year, my third-class year, passed uneventfully for me. The first two months of the year passed rather eventfully for four of my class, because they indulged in hazing to such a degree that they were court-martialed and dismissed. The rest of the year is a blank space in my memory: I cannot remember a single event or incident. At the end of the academic year Weggman again was number one, and I was number two. At the beginning of the year I was elected secretary and treasurer of the class; a position to which I was reelected in each of the two following years.

My second-class academic year began in October. The second-class year was usually considered the most difficult year, and it was so in our case. At the end of that year Peters was number one, I was number two, and Weggman, who had fallen behind a great deal this year, stood number three.

The events of my second-class year that stand out the

most clearly in my memory are my fight with Michelson and the trip of the midshipmen to Washington to take part in the parade on Grant's second inauguration, March 4, 1873.

My fight with Michelson was caused by what I thought to be an affront to my official dignity. I was a "double diamond," or sergeant, as was Michelson; but one evening, due to the absence of the cadet petty officer of his company, which was the first company, it devolved upon Michelson to give the order "right dress" after we went left face into line. While we were gradually easing back or moving backward in order to form a straight line, Michelson sang out, "Dress back, Mr. Fiske."

So I met him after dinner and challenged him to fight, a challenge that he accepted with promptness and apparently with pleasure.

Michelson was a real genius. He was said to study less than any other man in the class and to occupy most of his time in scientific experiments; but he always stood near the head of the class. Besides, he was a lightweight athlete in a moderate way, and took extra lessons in fencing and boxing. These were arts of which at that time I was ignorant, as we were not taught them until our first-class year. Michelson made some experiments on the velocity of light in 1876 that gave him world-wide fame. He resigned a few years later, and became one of the foremost physical scientists in the world. The fame of Professor A. A. Michelson is bright in the minds of the scientific men of every country, and his name will be known long after the names of many men who are eminent now have passed into oblivion.

The details of the fight were very carefully arranged; in fact the arranging of the details took more time than did the fight itself. That I had not the slightest chance became evident in about one minute; but I hammered away the best I could until the referees saw that I could n't see out of either eye and declared that the fight was finished. I was put on the sick list by the surgeon

for "contusions," and I stayed on the sick list for eight days.

The battalion of midshipmen were called at half-past four on the morning of March 4, 1873, and put into an early train—a very cold train—for Washington. After reaching Washington, we formed and marched through the city to some house. We then broke ranks and went into the house to get warm. I was color-sergeant of the battalion, and I remember that I had a very hard time struggling along against the cold wind and the dust that it raised. While we were in this house a rumor was brought in that the West Point Cadets were not going to wear their overcoats. As it would be very disgraceful for us to wear ours in those circumstances, we decided instantly that we would not wear them. The rumor had just as much basis as most rumors have; but the news of our not going to wear our overcoats reached the West Pointers promptly, and so they had to discard theirs. The result was that the cadets of both academies passed an extremely miserable day. During the march of our battalion from the railway station I had so much difficulty in carrying the flag against the wind, that two color-corporals in the rear rank had to push me along. So the officer in charge put Bowyer temporarily in my place, and put me in the rear rank in Bowyer's place. Bowyer was a large and very strong man, and he carried the flag with little trouble.

I began my last year with the unfortunate idea that both Weggman and Peters were ahead of me for the first three years, and that I might just as well "take it easy." I did take it easy, and I have been sorry for it ever since. I became devoted to dancing, and I took much more interest in the pretty Annapolis girls than I did in my drills and studies. As one of the cadet officers, I sat at a special table near the exit of the mess-hall; but it was strictly against orders to leave it without permission. One afternoon I made an engagement with a young lady to meet her at a quarter-past one next day, and at the appointed time

I sneaked out of the mess-hall when the officer in charge was not looking. I joined the young lady and had a pleasant walk; but the fact was noted by one of the officers, who reported it to the superintendent, Commodore Worden, the man who fought the *Monitor* in the battle with the *Merrimac*. The next day I was reduced to the grade of private. I was compelled to cut off my stripes and double diamonds, and a letter denouncing my conduct was read to the battalion.

During the year four other cadet officers and petty officers were reduced to the ranks, so that there were five of us. We formed a club, which we called the "Privates Club," to enter which there was no initiation fee, and for which the only requirement was that one should have been reduced to the ranks for some misconduct. The only principle of the club was to refrain from going to dress-parade.

Things ran on for a short while very pleasantly until about a month before the end of my course at the academy. One evening, about half an hour after dress-parade, I received orders to report to the officer in charge. He said:

"Were you at dress-parade this afternoon, Mr. Fiske?"

"No, sir," I said.

"You are not on the sick list or excused list, I believe."

"No, sir."

"Have you any excuse for not having gone to dress-parade?"

"No, sir."

The next morning I was put under arrest in a modified degree. That is, I was ordered to attend all the recitations and exercises, but was to be marched down to the *Santee* every evening after supper, and marched back to breakfast formation the following morning. The *Santee* was an old sailing ship, which was moored alongside of a wharf, and was used for the double purpose of holding great gun exercises and as a place of confinement for midshipmen under punishment.

18 FROM MIDSHIPMAN TO REAR-ADMIRAL

I spent my last month at the Naval Academy under those conditions. The annual examinations were held in May, and when the final multiples were all made out, I found, to my astonishment, that I was number two for the four-years' course, and would take rank next to the head of the class. This fact surprised my classmates also, because they thought that I had gone to pieces altogether. In fact, I had; but the shock of being sent to the *Santee* braced me up, and operated to make me do very much better on my final examinations than I would have done otherwise. When all the accounts came in, I found that I had really been number one for the first three years, and that I probably could have been one for the four years if I had only shown a little more sense in my last year.

At the academy, at that time, the "first five" in the first class of cadet midshipmen wore a star on each side of the collar, and on graduation day they received their diplomas from the secretary of the navy before the rest of the class did. Peters received his diploma first. To receive it, he stretched out an arm that had on it a double diamond and four stripes; and I never shall get over the mortification that I felt when, immediately after him, I stretched out my arm on which were no stripes or diamonds whatever, but the marks of some that had been cut off for misconduct.

We graduated about noon May 30, 1874. I remember that my principal anxiety then was to see that the various members of the class paid for their class-rings, the average cost of which was about fifty dollars. As secretary and treasurer of the class, I had made myself personally responsible with Bailey, Banks & Biddle for all the class-rings; and so I was very diligent in rounding up the members of the class, and reminding them to pay for their rings out of the reserve pay which the regulations of the academy compelled every midshipman to accumulate. All the class paid for their rings that afternoon except two, who forgot to do so; but a little correspondence with them soon rectified the situation.

I suppose we felt very much as all graduates do, but I do not see how the graduates of any other institution could feel quite so much uncertainty about the future in one way and so little in another. There is no life so varied as that of a naval officer, so full of startling and sudden experiences, and so uncertain in regard to what those experiences may be. But, on the other hand, each of us had before him the practical certainty of honorable and sufficiently lucrative employment for a lifetime, a prospect which few other graduates have.

I doubt if any of us was ever as good a man afterward as he was on his graduation day. Every one of us had the purpose to lead an honorable life, to reject all temptations, to refuse to take unfair advantage of anything or anybody for the sake of material gain, and to live in such a way as to be worthy of the navy. We had a profound reverence for the navy, and the greatest ambition which any of us had was to be "a good officer."

This was not a mean ambition or one easily realized. A wise old sailor said to me one day on the practice cruise, "I don't think it's hard, Mr. Fiske, to be a naval officer; but it must be awful hard to be a good one."

Few wiser remarks have I ever heard. How easy it is to fill any position in life, how difficult it is to fill it well!

CHAPTER III

THE MIDSHIPMAN CRUISE—KALAKAUA AND THE SANDWICH ISLANDS

AFTER graduation I went out to a farm which my father had bought outside of Cincinnati, but I was not allowed to stay there long. Of course I did not wish to do so, for I was eager for those adventures on the sea and in foreign lands that I had read about in boyhood, and of which I had heard many stories while I was at Annapolis. My mother did not sympathize with my feelings very much, but she did somewhat, for she herself was of an adventurous disposition; perhaps this was the reason she had married a minister. At length, about the first of August, orders came for midshipman B. A. Fiske to report on August 15, 1874, to the commander-in-chief of the North Pacific Fleet at the navy-yard at Mare Island, California. My mother was almost prostrated when the orders finally came; but she went bravely with me to the station, and waved farewell as the train started to the west.

The trip to Mare Island, which is about forty miles from San Francisco, took seven days. It was really a most uncomfortable trip, but to a man who was only two months more than twenty years old it was full of adventure and sometimes of excitement. The railroad had been completed only a few years before, and it was hardly yet finished in all ways. There were no dining-cars, of course, and we took our meals at stations along the road, which in many cases were of unpainted pine boards. There had been a number of attacks on the trains by Indians, and so every man of us carried arms of some description. I carried a tremendous navy revolver,

which could fire six 45-caliber bullets, and which had belonged to my uncle. We occasionally saw Indians galloping about, and the villages that we passed were of the crudest character. At some of the stations some of the passengers would get off, and get into enormous stage-coaches, drawn by four or more horses, coach and horses covered with white dust; and the horses would gallop off with them, sending up clouds of white powder into the air. The railroad lay across the Great American Desert, as it was then called, and we traveled for days along alkali plains on which there was no vegetation except a very little sage-brush, and the air was so dry and hot that our lips cracked.

One afternoon I was sitting on the rear platform of the rear car, going through a narrow cañon, when in an instant we emerged into a broad and level plain, covered with luxuriant green vegetation; and we looked behind us and saw a wall of rock, through which we seemed to have come as through a door. We were on the fertile ground of Utah, which the Mormons had made fertile by cutting canals of water through it.

On the seventh day of the trip I arrived at Vallejo, a little town opposite Mare Island, on which the navy-yard is situated, and I drove proudly in a carriage to the Barnard House.

I saw a number of naval uniforms there, and I made many acquaintances before dinner-time. That evening there was a dance in the little hotel ballroom, and I danced every alternate dance with Miss Greathouse, a pretty girl from Kentucky, who was attired in an absolutely beautiful pink-and-light-blue dress.

The next morning I donned my uniform and reported to Admiral Almy, who was commander-in-chief of the fleet, but had a temporary office in the navy-yard. His flagship, the *Pensacola*, was undergoing radical repairs, and was moored alongside the wharf. Her condition was such that nobody lived on board. The crew and the midshipmen lived on board the old line-of-battle ship *Inde-*

22 FROM MIDSHIPMAN TO REAR-ADMIRAL

pendence, and the higher officers lived on shore, most of them in San Francisco.

During the next five months I had a splendid time. Our duties consisted in supervising, under a lieutenant, the work of repair parties of sailors sent on board the *Pensacola*; but these duties were over by five o'clock, and on every alternate day we did not have any duties at all. We had a great deal of leisure, too much, in fact; so that I am surprised now that we kept as good as we did. Our main diversion was to go over to Vallejo and call on the young ladies there and play billiards in the Barnard House. I became very devoted to the daughter of the Presbyterian minister. One day I was standing at the bar drinking a sherry cobbler, which was a great drink in those days. Just as I finished my drink, I saw this young lady go by. I immediately hurried out to the street, and I joined her before she had gone very far. I had hardly done so when the barkeeper rushed up and seized me suddenly from behind, shouting "Look here, Mister, you didn't pay for them drinks."

There was a great deal of drinking going on then among the naval officers in Vallejo. There were a number of ships in port, which had come in from long cruises at sea, and the officers had saved up a good deal of money. They were mostly young men, the average lieutenant being about twenty-six or twenty-seven years old, and nearly all of them were unmarried. When I remember how much drinking there was, and how little actual drunkenness, I realize what a gulf there really is between the two conditions. I became convinced, however, in a few days that I was in a dangerous atmosphere. I considered the advisability of adopting total abstinence; but I hesitated to do this, as it would put me virtually in a class by myself. As I had the ambition which most young men had, and still have, of being "a man of the world," I finally decided to abstain totally from distilled liquors (that is, from whisky, brandy, gin, alcohol, and rum), but to drink wine and beer. I cannot say that I

have ever had any reason to regret my decision, which I carried out, with very few lapses, for more than thirty years.

Finally the *Pensacola's* repairs were finished, and we started for Honolulu. We steamed out of the beautiful bay of San Francisco just before sunset on January 27, 1875, and the setting sun threw a golden light upon the water ahead of us. We accepted this as an augury of a cruise that would be bright and happy, and full of adventures of many kinds. We had on board King Kalakaua of the Hawaiian Islands, then called the Sandwich Islands, and a suite of several officials. Kalakaua had just made a tour of the United States, and was going back to his dominions under the auspices of the United States Government liberally supplied with cigars and wine.

His birthday occurred a few days after leaving port. I sat next to Governor Capena, governor of the island of Maui, at dinner that night, and the governor's servant stood behind his chair. This was the first time that I had ever been at a large dinner and the first time I had ever drunk champagne. I did not notice that the governor's servant filled my glass every time I looked away, and the result was a headache next morning so clean-cut and sharp that it made an indelible impression on my memory.

The following evening I was officer of the forecandle, and about 11 o'clock I saw the light of a lantern flashing about near me. I went up to it, and saw it was held by a sailor, who seemed to be looking into out-of-the-way places. I said to him sharply:

"What are you doing with that light?"

"I'm looking for his Majesty, sir," he replied. His Majesty could not be found on deck, but was found later in the admiral's office, asleep.

The *Pensacola* was a double-decked frigate, with auxiliary steam power, but at sea we always proceeded by sail alone. One morning about daybreak I was aroused by

24 FROM MIDSHIPMAN TO REAR-ADMIRAL

a frightful crash, as if the whole ship had split in two, and heard the boatswain's sharp whistle and his call, "All hands save ship." There were thirteen midshipmen and three clerks sleeping in the steerages then; I was one of the fortunate ones who had a bunk. I dressed myself quickly and went on deck. I saw the executive officer, Lieutenant-Commander Brown, giving orders on the bridge over the quarter-deck, with the captain standing beside him, and a scene of indescribable confusion everywhere. It was raining hard, and a gale was blowing, and the ship was rolling heavily. I could not make out at first what was the matter, but I finally saw that the middle one of the three masts, which we called the "main mast," had broken in two about half-way up from the deck; that it had fallen over, bringing down with it the maintopsail-yard, and that it had carried part of the other two masts with it also. I have always been of a timid disposition, but, for some reason, in times of excitement I seem to get so interested as to forget it. So on this occasion I jumped into the work aloft, and attracted the attention of the captain; so that he reported me, among others, to the admiral for good conduct in the emergency.

By the close of the day we had the wreck cleared up, but not, of course, repaired, and a few days later we steamed into the most heavenly place, according to appearance, that I had ever seen. We approached the harbor of Honolulu by steaming to the westward along the southern coast of the island of Oahu, a coast evidently of volcanic origin, high and rugged, but covered for the most part with dense green vegetation. We rounded Diamond Head, and then slowed down, and took a pilot on board. He conducted us through a narrow channel of deep blue water, bounded on each side by coral reefs, and then turned to the left into an approximately circular land-locked bay. Near the beach was a little city of white houses, shining through trees, with here and there a church spire or a gray tower

showing, and backed by a low mountain-range, over which hung dense white cumulus clouds that were blown toward the west by the brisk trade-wind.

We anchored perhaps a quarter of a mile from the water-front of the town, planted an anchor on a reef near by, and hauled our stern around toward the reef. In this position our bow pointed toward the northeast, facing the direction of the trade-wind, which came across the Pacific Ocean and down Nuana Valley.

We stayed there four months. During these months man-of-war discipline was maintained in the strictest fashion on board the ship, and drills were carried on with spirit and regularity. Some of the drills consisted in infantry manœuvres and marches on the shore. Our captain was Bancroft Gherardi, one of the finest men I have ever met, kindly, highly intelligent, interested in everything, and exceedingly strict. The *Pensacola* was as neat as the typical bandbox, and so was everybody on board. The life on board was such as would meet the requirements of the most exacting person.

But the life on shore was different, even the lives of some of the officers of the ship, including, I am sorry to say, myself. The king was in many ways what is now called a "sport." He was a man of great natural ability, well educated, attractive, an excellent speaker, rather handsome, a real friend of his people, and a typical good fellow in every way. But he drank more than was good for him, and his code of personal morality was not much above that of the rest of his people. He had a court which was like those of the European kingdoms, and modeled on them, except, of course, that it was smaller, and that the officials were not in the Vere de Vere caste to the same degree as were the officials of the European courts. For instance, the lord high chamberlain was known in his daily life as "Ned Boyd, the butcher." The officials of the Government were native Hawaiians or half-whites, though I think the attorney-general was pure white. This attorney-general used always to wear a

very large, gray high hat with an enormous brim, a long black coat, a big red necktie, and light trousers. As he had an extraordinarily red face, his appearance was attractive; that is, it attracted attention.

The king introduced us into the best circles of Hawaiian society. After that I think that the conduct of some of us was not such as our parents would approve of. There were two kinds of society in Honolulu at this time, the missionary society and the half-white society. The missionary society was composed of as fine people, men and women, as one would meet anywhere. They were either the families and relatives of missionaries or the descendants of missionaries. The half-white society was composed, as the name indicates, of people who were half-white and half-Kanaka, the word "Kanaka" being the native word for Hawaiian, and in the Hawaiian language meaning literally "a man." One family in the so-called half-white society was not quite half-white; this was the Afong family. The father was a wealthy Chinese merchant, and the mother was the daughter of a Portuguese man and an Hawaiian woman. This family had several attractive daughters, only one of whom at the time of our visit was "in society."

At first the base of our operations on shore was the Royal Hawaiian Hotel, but shortly after our arrival half a dozen of us rented a cottage near it, which we called "Whisky Ranch." It had a few comfortable rooms for sleeping and an enormous bath-tub, the top of which came even with the floor.

I remember two grand balls during our stay. The first was given by the Government to the *Pensacola*, and the second was given, as I recollect it, to some German ship. I am sorry to say that my recollections of either ball are not at all clear. I have never seen since such a general disregard of prudence in the matter of drinking as I did at those balls, especially at the first ball. A large pavilion was erected on the grounds of the hotel, and in this the dancing was held; but people would go out con-

tinually to drink champagne. I do not remember that anything else was drunk. My recollections of the latter part of the evening are very cloudy, but very beautiful. Shortly afterward I awoke in the cool, gray dawn of the "morning after," and found myself lying on the front steps of the hotel in full-dress uniform.

The editor of the daily paper was at the ball. The next day the *Honolulu Gazette* had a really wonderful account of it. This was so wonderful that most of us got copies of the *Gazette* and kept them. I have lost mine, and I am sorry to say that I remember only one sentence in it. It read, "It was a Honolulu night of tender tone; the scandent stars kept time with the musically marching hours, and shone from azure depths of circumambient love."

One afternoon about sunset I went forward to relieve Midshipman Robinson as officer of the forecastle. The dinghy was being hoisted when, through clumsiness, the forward end became unhooked, and the man in the bow fell into the water, which was perfectly smooth. Robinson and I jumped overboard, and so did about one hundred sailors, and in a few seconds the water was crowded with men trying to save somebody from drowning, but nobody knew whom. Several men came near being drowned, though nobody was. The only result of the episode, as far as I know, was that the salt water got into an expensive watch that Robinson wore and ruined it.

At some time about the first of July we went on a cruise to the other islands of the group. We got under way in the afternoon, and toward evening were steaming to the eastward against the fresh trade-wind, which virtually always blows here. We passed the Island of Molokai, to which lepers were sent and are still sent. Then we turned to the southward, and the next day we steamed down the west coast of the beautiful island of Maui, and looked with delight at the high mountain-ranges, covered with wild and luxuriant vegetation, and pierced by

narrow, rocky cañons and broad and fertile valleys. We anchored in the bay of Lahaina, called by sailors "blow-hole bay," because the wind always blows there with tremendous velocity from the shore, having been funneled through a cañon, which is wide on the east side and narrow on the west. Rowing from the ship to the shore was very arduous labor, but coming back was easy, because we simply "peaked" the oars, so that they acted as sails, and made the wind blow us from the shore to the ship. Some of us made an expedition from here to a valley that Mark Twain described as being the most beautiful in the world. Certainly it was beautiful, being narrow and deep and long, bounded by high mountain-ranges, and filled with ferns of many kinds, some of them very large, and some of them exceedingly delicate and fine.

From Lahaina we went to Hilo, the largest town in the Island of Hawaii, the southernmost and largest island of the Hawaiian group. We spent one day in steaming to the eastward along the high, steep volcanic coast, part of which was literally "pinnacled in clouds." Many waterfalls could be seen falling down the abrupt and precipitous coast-line; at one time we could count eighteen.

The next morning, after anchoring, I took the sailing-launch with a party of men ashore to get fresh water. This procedure was very frequent in those days and in the days gone by, but I doubt if it is ever practised now. I took the sailing-launch up the small river that emptied into the bay, and filled it with fresh water by the simple process of taking the plug out of the bottom and letting the water run in. A number of Hawaiian women came and sat on the beach near by, and I got a half-white man who happened to be there to tell me what they were talking about. He said that they were talking about the men, and he told me what they said.

The reason for going to Hilo was that we might go from there to the volcano of Kilauea. We went to the volcano in parties. I was in a party with three other

midshipmen, Dorn, Robinson, and Alderdice. The trip took twenty-four hours, including our stop at night, and was made on horseback. We arrived at the Volcano House one morning, and at once descended into the crater. The crater was about three miles across, and was in general circular in shape. We descended to the floor of the crater by means of a succession of ladders. The floor of the crater was of more or less hard lava, seamed with fissures about two inches wide, down which we could see red-hot lava. In many cases the red-hot lava was so close to the top, that we put our sticks down and lighted them. In one of these fissures, near the top, I saw some ferns growing. I picked one of them and I sent it to my mother in my next letter. Not many years ago, in looking into the family album, I found that fern, secured on a piece of paper, with an explanation as to what it was, written in my handwriting.

Besides the fissures, which ran in all directions across the crater-floor, there were three burning lakes of molten lava, each an acre or more in extent. To a man standing on the shores of one of these lakes the scene was inexpressibly full of awe. The whole mass of lava was in violent ebullition. The scum at the top was very dark in color, but the crust was continually broken here and there by explosions underneath, when little columns of red lava would be thrown up by the forces beneath. I remember very vaguely seeing what might be called "a lava-fall," and standing by a small river of red molten lava that rushed over a precipice down into a sort of hole and disappeared into the bowels of the earth. At one time, as we were standing on the brink of one of the lakes, the wind suddenly shifted in such a way as to blow over us the hot sulphurous fumes that were rising from the lake. We seemed to be in immediate danger of asphyxiation when the wind suddenly shifted again. The guide told us then that this was the principal danger in going into the crater.

That night we got on our horses and galloped around

the crater. The night was very dark, and we could see the red fissures crossing back and forth on the floor of the crater, the three burning lakes, and the reflection of the whole showing red on the clouds above. The Volcano House was about a hundred yards from the brink of the crater, and the last thing I saw before I closed my eyes that night was this red reflection on the clouds.

The next morning we returned by another route than the one by which we had come. We started in a heavy rain, and rode for some hours through a dense vegetation. Then suddenly we came to what in the Hawaiian language is called a *pali*, and there we saw ahead of us a large plain perfectly sterile and flat. Descending the *pali* by a road that was narrow and winding and yet steep, we entered into another climate. We left a climate that was wet and went into one that was dry. From the top of the *pali* we could see the ocean far beneath, with the horizon so far away that it seemed almost on a level with us, and so faint that we could hardly tell where the sea stopped and the sky began, though the air was very clear.

The explanation for the sudden change in climate was that the country which we had been riding through was so situated that the northeast trade-wind, blowing on it directly, condensed into mist and rain, whereas the plain upon which we descended was so sheltered behind the condensing high land that the air which blew over it was wholly dry.

About one o'clock we came to a little village, and were welcomed most hospitably by a French missionary. He invited us to lunch. The lunch consisted of bread-fruit, which is a little like coarse sweet potato with the taste taken out, and of warm water, which he kept in bottles. Water was very scarce there, and had to be treasured carefully. The priest spoke English beautifully, and was one of the most attractive gentlemen I have ever met. He had a tiny church, and inside were some highly colored pictures of the saints. A native pointed to these pic-

tures proudly, and said "*Maikai*," which is the Hawaiian word for "good." The priest told us that about a year before he had come back from Paris, where he had spent his vacation after a previous sojourn of seven years in this place, and that he was then looking forward to his next visit to Paris, which would occur six years later. This delightful and highly cultivated man seemed as happy as most of us, and yet his life was spent in an arid tract somewhere in the Island of Hawaii, among the most ignorant kind of natives, where he rarely saw a white man and rarely got a mail. Truly "the mind is its own place, and of itself can make a heaven of hell, a hell of heaven." This man's happiness was due to the fact that he was accomplishing his mission. His mission was the noble one of saving the souls of men.

That afternoon we rode our tired horses over what was mostly beds of cooled lava, and at nightfall we arrived at a little inn kept by an old sea-captain who had married an Hawaiian woman. We and our horses were just about as tired as we could be and I know of one young man who soon stretched out between two cool white sheets and forgot how tired he was.

The next morning we were so sore that we could hardly eat our breakfast. The old sea-captain then said that there was near by a pool of warm sulphur water which was splendid for the complaint we had, and we concluded to try it. So he and his two young daughters, whose mother was a Hawaiian woman, escorted us to this pool. It looked very attractive, but seemed a little shallow. We soon found, however, that it was exceedingly deep, but was so clear and the bottom so white that the bottom looked to be nearer the top than it actually was.

As we made no move to disrobe, the captain said, "Why, aren't you going in?" We felt a little natural modesty in the presence of these two young women until we saw them disrobe and plunge head foremost into the pool. Then we promptly followed suit, and had one

32 FROM MIDSHIPMAN TO REAR-ADMIRAL

of the most delightful baths we ever had, the warm sulphurous water acting like balm to our aching joints and muscles.

We joined the ship that evening, and a few days afterward sailed back to Honolulu; but before we left, a fleet of war-galleys, decked with flowers and plants and filled with natives armed and in war costume, paraded around the bay to do us honor.

We stayed in Honolulu about two months. The principal thing that I remember is the ball that was given to a German ship, to which we were invited. The midshipmen of Whisky Ranch invited some of the German midshipmen to the cottage during the evening. As it was too laborious an undertaking to go to the hotel every time we wanted a drink of champagne, we sent our servant, Tom Peters, to the hotel, and he brought us plenty. The night passed without ennui, but I remember only one incident, and that was receiving the congratulations of the company because I threw a base-ball bat through the window with such skill as to break every pane of glass.

We left Honolulu on the twenty-fifth of September, and I am sure that every one of us carried away with him an affectionate feeling for the kindly people, the beautiful flower-bordered streets, the silvery moonlight, Diamond Head, the lunar rainbows, the *pali*, the wonderful verdure, the quiet, landlocked harbor, the fresh trade-winds that blew unceasingly, and the delightful warmth that was never heat.

A trip of thirty days, taken under sail, over warm, smooth seas, brought us to La Paz, a small mining town in the southeastern end of Lower California, on the Gulf of California. It was a terribly hot place. The only thing I remember clearly is going ashore one afternoon and meeting there a sailor who had just received an honorable discharge from the ship, and whose name was Segur. Segur had been captain of the foretop; that is, he had been in charge of all the sailors who worked on

the foremast and on the sails spread on it. I was "midshipman of the foretop," and Segur had been my right-hand man. So when I met Segur ashore, already in his civilian clothes, and Segur asked me to have a drink with him, in memory of old times I consented. Unfortunately, I broke my rule of never drinking spirituous liquors, and drank a Mexican drink called "mescal," with Segur, which in a short time made me exceptionally drunk. The next day, when I was not feeling very well, a dozen disreputable-looking Mexicans came off to see me, and said I had invited them to dinner. Probably I had; but I repudiated the invitation, nevertheless. This was the last time I ever became intoxicated.

From La Paz we went to Mazatlán. I went to a *relojería*, to have my watch repaired. I spoke to the watchmaker in my best Spanish, and he answered in perfectly good English, "What do you say?" I was so intent on getting my Spanish right that I repeated my question again in Spanish, but was quickly called to my senses by a not very complimentary remark from Dorn. Dorn and I then went to buy some Spanish books, in order to improve our Spanish. We could not find any book-store but in a dry-goods store we found two Spanish books, and only two. Dorn bought one, and I bought the other. My book was called "Historia Griega," which, being translated, means "Greek History."

From Mazatlán we went to Acapulco, and anchored there in a tremendously hot, landlocked harbor. Holmes and I went on a hunting expedition in a canoe upon a lagoon near by. It was picturesque in the highest degree. We spent hours being paddled by a native over smooth, warm water, unruffled by a breeze, amid the most luxuriant vegetation that can be imagined, flown over by birds of many kinds, but all of brilliant plumage.

The trip from Acapulco to San Francisco lasted thirty days, the same time as the trip from Honolulu to La Paz. On the trip to La Paz we had not seen a single thing except the sky and the water and a few birds, but on the

34 FROM MIDSHIPMAN TO REAR-ADMIRAL

way north we passed several vessels. The trip was pleasant most of the time, though dull, of course, but it ended in a five-days' northwest gale. This gale not only made the ship roll tremendously, but blew a cold wind right through the very marrow of our tropically heated bones. The gale ended, however, as all gales thus far have done. It was during this gale that some one said to me, "You know all gales have ended except one." I fell into the trap and asked, "Which gale was that?" He answered, "This one."

At last, on the twenty-seventh of January, 1876, we steamed into San Francisco Harbor, exactly a year after the day when we had left it. We saw the water-front decorated with flags, a great many people on the wharves, and a great many excursion steamers filled with people rushing about the bay. Having been accustomed for a year to be the center of attraction everywhere, we accepted these demonstrations as proper tributes to our homecoming. But we soon found that they were given in honor of the arrival of the *City of Pekin*, a brand-new steamer of the Pacific Mail Company, which had just reached San Francisco after a trip from New York through the Strait of Magellan.

We went to our old home, alongside the dock at the Mare Island Navy-Yard, and proceeded to get repaired again. This time, however, the repairs were not of a very serious kind, and so we continued to live on board ship. We resumed acquaintance with the young people of Vallejo, fair and unfair, but the conditions were evidently different. Before we had left, we had been wholly inexperienced youngsters just out of school; now not only were we older by a year, but our growth had been forced by the hothouse conditions of Honolulu life. Besides that, we had then been just at the beginning of our cruise, whereas now we were nearing the end; and we knew that we should soon be ordered east, after that to cruises in other parts of the world. Furthermore, we saw immediately ahead of us the necessity of preparing for ex-

amination for promotion to the grade of ensign, and each felt a serious doubt as to whether he would pass the examination, and considerable anxiety as to how successfully he would pass it, if he passed it at all. The degree of success in passing the examination was a very important thing; for in those days we did not become ensigns (in fact, we were not finally graduated) until two years after getting our diplomas at the academy. The two-years' cruise as a midshipman was held to be part of each man's academic course, and the marks which he received on the examination at its conclusion were combined with the marks he received at Annapolis to establish his standing in his class and his place on the official list of the commissioned officers of the navy.

We were rather young in those days, however, and we spent most of our time off duty in pleasures of different kinds, paying little heed to the morrow, until about the first of July, when an order came from Washington to proceed to our homes. Although the order was expected, it came to us as a shock. We suddenly realized that our midshipman life was over, with its merely partial responsibilities, and that we should soon have to take up the responsible duties of commissioned officers. We realized, too, that our first cruise was over, and that the bright flush of early youth had passed, and we said good-bye to the *Pensacola* and to our good friends of Vallejo with hearts not wholly light.

The order to proceed to our homes brought each one face to face with the fact that he did not have the money with which to proceed there. During the two years that had elapsed since we had left the Academy, our pay had been \$1000 a year, with thirty cents a day additional for what was called the "ration." This \$1109.00 a year could buy a good deal more in those days than it can now, and it was enough for a young unmarried man to live on, especially if he had free quarters on board ship. But we had spent a good deal in entertaining the young ladies of Vallejo, and in riding horses in Honolulu; so

that every one of us was in debt. When I say "us" I mean those of my class, Holmes, Dorn, Allderdice, Nostrand and myself. We all had to telegraph home for money. I left Vallejo about \$250.00 in debt. I did not like being in debt at all; it did not seem to harmonize with the gold and blue and the straight cut of my uniform. Fortunately, I was able to pay off my debt in a very few months; and the feeling of relief was so great when the last cent was paid, that I resolved never to get into debt again:—a resolve which I have been able to carry out thus far.

A pleasant trip across the continent brought me to my father's home, not far outside of Chicago. On the trip I became acquainted with a delightful lady of the aristocratic sort, who had with her two handsome daughters, also of the aristocratic sort. I told them that my father's name was William A. Fiske, and that he was rector of a church. As we approached the town in which he lived, and were looking out the window, we passed a disreputable looking saloon, outside of which was painted in large letters, "W. A. Fiske, Wines, Liquors, and Cigars."

Not long after that we arrived at my destined station.

For some reason, I was not expected then, and no one was at the station to meet me. I had a great many clubs, bows, arrows, spears, etc., which I had collected in the Hawaiian Islands. So I hired a little wagon, and in this wagon I drove up to the pretty parsonage with my extraordinary baggage.

CHAPTER IV

EXAMINATION, TYPE-WRITER, BOAT-DETACHING APPARATUS,
TORPEDO STATION, AND THE *PLYMOUTH*

I REMAINED home about three months, studying hard for my examination. There were many distractions, but though I permitted myself to be distracted considerably, I kept to my task with fair success. The transition from the life I had been leading for the last two years was sudden and almost violent. The conditions in the quiet, well-ordered family of an Episcopal clergyman were very different from those of a devil-may-care midshipman in Honolulu, and I did not find it easy to adapt myself at once. The first thing that I noticed was a tendency to use profane language, a tendency which had grown upon me so gradually that I had not noticed it. I also found it difficult to study. It seemed very dull to spend the afternoon sitting at a table studying gunnery or working out problems in navigation. For two years I had been living a life of constant action, constant change, and I now found it almost impossible to keep at any one thing for half an hour or think on any one subject for half that length of time. In about two weeks, however, I found that I had readapted myself to my former life to a considerable degree, and in about a month I was again to all intents and purposes, so far as could be seen, simply the minister's oldest boy.

Sometime in October the members of the class, thirty in number, reassembled at Annapolis. A rigid examination was then given us in all branches of our profession. I felt rather discouraged with myself, for I did not seem to do very well. After the examination we were ordered home. For some reason that I do not now remember I

went home by way of New York. The evening after arriving there I went to the theater, and on my way in I bought the evening newspaper. During one of the pauses between the acts I glanced through the newspaper, and there, to my amazement, I saw my own name as number two in the class. Not only was I gratified with this, but I was delighted to see that Peters was still number one. We all considered him the best man in the class. He was president of the class and the most popular man, and the man whom we all expected to make the best career. But Peters was stricken with typhoid fever a few months later, and was never quite the same afterward. He became a captain in time, but he never had a captain's command, because, shortly after obtaining that rank, he retired voluntarily as commodore. He died in 1917.

I went home on "waiting orders," and stayed there all winter. I would have found it very dull, had I not invented a type-writer. One evening at Marc Island the thought had suddenly occurred to me—why I cannot imagine—that it would be much better to telegraph in printed letters than to telegraph in dots and dashes. The idea seemed so beautiful to me that I immediately set about devising an apparatus to accomplish it; but I was confronted at once with lack of knowledge as to whether an electro-magnet could exert enough force to make a good print of a letter on paper. I had stood at the head of the class in electricity, but I had had no practical experience with electric mechanism. In thinking over the question, I concluded to make a little apparatus in which the printing should be done not by electricity, but by the pressure of the finger; so as to clear up all the printing part of the problem; and I got one of the machinists on board the *Pensacola* to make a little machine. This machine I kept for many years. Of course, before the machine was really designed, I realized that it might have a value as a sort of writing-machine without using electricity. After I passed my examination, I took up the writing-machine idea in earnest, with the intention of

taking up the telegraphic machine later. To my surprise and intense disgust, I found that both ideas were old; that type-writers were already on the market, and that in all our large cities there were printing telegraphs, which were used principally for sending out quotations of stocks.

But I went ahead with my idea, and I had a type-writer constructed, for which I made two applications for patents, which were granted. My type-writer did not work very well, but this did not discourage me. What discouraged me more than that was the attitude of all the men to whom I showed my type-writer. They all said substantially: "Of course this doesn't work very well, but I dare say you could make it work all right. But I can't see the slightest use for such a machine, no matter how well you get it to work, because it would be an insult to a man to write him a letter with it."

In the spring of 1877 I was ordered to the U. S. S. *Wyoming*, then alongside the dock at the Washington Navy-Yard. While there I heard about Edison, and I bought a book called "Electricity and the Electric Telegraph," by Prescott, which I have in my library still. I began to study electricity, and I also became interested in two inventions which had just occurred to me. One was an arrangement whereby I thought a soldier could hold his musket more steadily than he could without it. So I made a drawing of my invention and showed it to the captain of the ship. He thought it was very good, and advised me to submit it, with an official letter, to the chief of the bureau of ordnance in the Navy Department, Washington. I prepared the letter and the drawing very carefully and sent them in. I got them back by return mail, with the endorsement, "The invention herein referred to is neither novel nor useful. W. N. Jeffers, Chief of Bureau."

About two weeks after that I invented a machine-gun, and I sent the drawing and description of that to the same office. To my delight, I got a long letter in return from

Commodore Jeffers, praising the scheme in general and expressing his gratification that "a young officer should turn his attention so seriously and so intelligently to the development of an arm much needed in the service."

By this time I had become interested in a design, which I had held vaguely for several years, for a "boat-detaching apparatus"; that is, an apparatus by which a boat could be safely and quickly lowered from a ship in a seaway, and afterward hooked on and hoisted again. I secured the necessary authority, and had an apparatus made at the Washington Navy Yard and fitted in a whale-boat of the *Wyoming*. But the time for the meeting of the annual class at the torpedo station in Newport was at hand, and I was able to get orders as a member of the class before the apparatus was completed. So I proceeded to Newport, and I received later a copy of the report of the board which tested the detaching apparatus. The report was very appreciative of the possibilities of the apparatus, but it said the apparatus required modification, because, when the detaching-lever was pulled, the detaching-hooks at both ends of the boat caught on an obstruction and held there, with the result that the boat dropped only about six inches.

The summer course at the torpedo station lasted four months. It was extremely interesting in every way, and the most experienced practical electrician in the United States, Professor Moses G. Farmer, was at the head of the electrical course. The one of his precepts which is the most interesting now was his mathematical demonstration that, although it was practicable to have a number of electric lights fed by an electric current, the lamps being "in series," one after another, as arc lamps were, it was impossible to have electric lights fed by a current which went through them all "in parallel" or together, as gas went through gas-burners. Professor Farmer proved mathematically that the system of lighting by which most buildings in the world are now lighted by incandescent lamps was scientifically impossible!

Lieutenant Couden was assistant to Professor Farmer and our lecturer in electricity. One day the commandant of the station, Captain Breese, sent for Couden and introduced him to George Bancroft and Chief-Justice Waite. He told Couden that these highly distinguished gentlemen had done the station the honor of visiting it in order that they might have explained to them the way in which two telegraphic despatches could be made to go over the same wire, even in opposite directions, without interfering with each other. Couden took them down to the electrical laboratory, where he had an electrical battery, telegraph keys, a blackboard, etc. He explained to these gentlemen for two hours. At the end of that time Chief-Justice Waite said he thought that he did get "just a kind of glimmer," but Mr. Bancroft said that he did not get even a glimmer.

One of our most interesting exercises was with the Harvey "towing torpedo." Half of the class—that is, about fifteen in number—would go on board the old schooner *Joseph Henry*, and the other half would go on board the steam tug *Nina*. Then the *Nina* would try to hit the *Joseph Henry* with the torpedo, which the *Nina* towed by a long steel rope through the water. The torpedo had, roughly speaking, the shape of a boat about four feet long and two feet deep and one foot wide; and it had a rudder screwed permanently over at such an angle that the torpedo did not tow directly behind the *Nina*, but about forty-five degrees to the right, and about one hundred yards distant. Each of us took turns in commanding the *Nina* and the *Joseph Henry*. One forenoon I was on board the *Joseph Henry*, when the *Nina* tried to go across our bows from the lee side, so as to drag the torpedo under our bow. The officer in command of the *Nina* miscalculated, so that, instead of going ahead, he struck our jibboom, and he did not even then stop the *Nina*. The officer in command of the *Joseph Henry* ordered the helm put down and he brought the vessel up into the wind and then around on the other tack, which

42 FROM MIDSHIPMAN TO REAR-ADMIRAL

was the proper thing to do. To accomplish this manœuver, it was necessary to haul in the main sheet, and he gave orders to do so. Nobody jumped to do so except me. While I was hauling in the main sheet I heard a call, "Stand from under!" I looked up, and saw the torpedo directly over me. I realized the danger, and turned to jump overboard; but the torpedo, the wire of which had become entangled in our rigging, dropped on me before I could get away, and I was thrown heavily to the deck with the weight of 330 pounds. The torpedo was of very irregular shape and had a number of sharp steel corners; so I do not quite see why I was not killed. I did not even lose consciousness, but the others thought I was killed, and the *Joseph Henry* was promptly towed to Newport by the *Nina*. I was not very badly hurt, and in about a month I was out on the *Joseph Henry* again. I was standing on the forecastle the first day after my partial recovery when the two vessels came together, and I realized that I was not wholly recovered, for I became intensely nervous. To hide it, I jumped up on the billboard, which was a foolish thing to do, and nearly cost me my foot; for the *Nina* picked up the sharp pee of our anchor as she forged ahead along our side, and dropped it almost in contact with my foot.

From the torpedo station I was ordered home, and afterward to the U. S. S. *Plymouth* at the Navy-Yard at Norfolk. By this time I had devised a modification of my detaching-apparatus. I succeeded in getting authority to have an apparatus made in the navy-yard, and secured in a whaleboat of the *Plymouth*.

Shortly after, we dropped down to Hampton Roads, had our inspection by the commander-in-chief, and then sailed for St. Thomas in the Danish West Indies. The *Plymouth* was an extremely pretty ship of about 1500 tons displacement, with both steam power and sail power; but she rolled a great deal, and was so constructed below the water-line that it was almost impossible to keep her clean. The water which gradually leaked into her, and

was swashed about as the ship rolled, made a smell that was exceedingly disagreeable, especially in heavy weather, when we had to keep the hatches battened down to keep water from going below.

Our stay at St. Thomas was pleasant, though hot. From there we went to Colon, then called Aspinwall, at the Atlantic end of the Panama Railroad. The change was not at all for the better so far as our comfort was concerned. At St. Thomas we had been in a pleasant, smooth, land-locked harbor, but at Aspinwall we were in a roadstead, where the ship rolled continually. The sailors had a song of which a few words were

And there you roll and roll and roll
And damn your eyes and cuss your soul.

There were a few other lines, which I do not remember, but each stanza ended with

In Aspinhole, in Aspinhole.

Aspinwall was certainly a miserable place, hot and unhealthy in the highest degree. Chagres fever, yellow fever, malaria, and brandy-drinking combined to cause a frightful mortality and a general air of desperation. I do not remember much about it clearly, but I remember that there was an idea that bananas and brandy did not go together, and that one man is supposed to have said to another, "You eat that banana and drink that glass of brandy, and I 'll bet you a hundred dollars you 're dead in five minutes."

In the steerage mess of the *Plymouth* was a very amusing man named Marbury. I told the mess one day of a plan which I had submitted to the bureau of ordnance two years before, which I had thought would be a great improvement over the clumsy apparatus the navy used then, by which small torpedoes on the ends of spars were shoved out over the bow of a steam launch against an enemy ship at the water-line, and exploded there. This was the plan which Lieutenant Cushing of our navy had

44 FROM MIDSHIPMAN TO REAR-ADMIRAL

so bravely and successfully carried out against the rebel ram *Albemarle*. My plan was to have half a dozen short mortars or eprouvettes on each side of the steam launch, which could be fired together by electricity by one man; each eprouvette to have in it a shell filled with dynamite or other high explosive. The plan was to have the steam launch run rapidly past a ship, about one hundred feet distant, and to fire the shells at the ship in such a way that they would hit her, drop into the water, and explode as soon as they had sunk a few feet. I thought this was a very fine plan, and I still think that it was much better than any plan then used. But it struck Marbury and the rest of the mess as very funny, and occasionally afterward, in the evenings after dinner, Marbury would give an exhibition of Fiske chained to the floor a few years later, in a padded cell, in a lunatic asylum, clanking his chains and yelling, "I 'm a dynamite shell fired from an eprouvette."

One morning a party of us took the train and made the trip that none of us was ever to forget, from Aspinwall on the Atlantic side to Panama on the Pacific side. We proceeded in a southeast direction through miles of tropical underbrush, moist, hot, and in every way unpleasant. Suddenly we reached elevated ground near Miraflores, and a scene of startling beauty burst upon us. The view was no longer shut in by tropical trees and underbrush, but extended far over the Pacific Ocean, and embraced the town of Panama and many ships at anchor. That night we slept in a hotel that was far from good, but which did not roll or thump or creak.

From Aspinwall we steamed north to Norfolk, and at some time in April found ourselves again alongside a wharf at the navy-yard. During the trip many trials had been held of my detaching-apparatus, at sea and in port, and they were so successful in every way that an extremely favorable report was made by a board of officers, and forwarded by the captain with his approval. Armed with this report, I went to Washington and called

on the chief of bureau of equipment of the Navy Department, Commodore Shufeldt. He told me that he was very glad indeed that I had invented such a good detaching-apparatus, because one was needed; and he said he would have me ordered to the navy-yard, New York, so that I could have its manufacture taken up by some manufacturing firm. He said there was one other detaching-apparatus used in the navy, invented by Lieutenant Maxwell Wood, and that he wanted to try out his and mine in competition with each other by putting each of them in several ships. He added that he had found, from his experience, that work of that kind could be much better done and in quicker time by private firms than by navy-yards. "Besides," he said, "it gives the inventor a little royalty; and that acts as a stimulus to other officers to invent things."

CHAPTER V

NEW YORK NAVY-YARD, *COLORADO*, ELECTRIC LOG AND *POWHATAN*

THE commodore had me ordered to the equipment department of the Navy-Yard at Brooklyn, New York, and I reported to the commandant there in a few days. This was in the spring of 1878, and although the navy had not yet got down as far as it had a few years later, it had sunk to a very low ebb. The navy-yard covered an enormous tract of ground, on which there were a few large buildings, and over which a general air of peacefulness and quiet reigned. A few people—officers, sailors, employees, and watchmen—walked about it leisurely, and on Saturday afternoons and Sunday afternoons many young women would come down to see the sailors in the ships.

I have been at the New York Navy-Yard many times in the forty years that have intervened, and every Saturday and Sunday afternoon the same young women have come there that came in 1878. At least they have seemed the same to me. Perhaps my feeling is like that which Cæsar is said to have expressed when he soliloquized, "I grow older every day, but the crowd on the Appian Way is always of the same age."

I reported to Commander Wiltse, who was in charge of the equipment department, and I found that he had already two assistants, Lieutenant Boyd and Master Seabury. I was to be his third assistant. The chief clerk's name, I think, was Ferguson, and he was the kind of man that now is called efficient. I discovered in a few days that Mr. Ferguson ran the entire machine; that the equipment officer signed the papers which were put in front

of him by Mr. Ferguson, and that the three assistants did nothing whatever, because there was nothing whatever for them to do. The navy was almost comatose. All the energy and life that it had had when the Civil War ended only thirteen years before was nearly gone. The idea of loyalty and the sense of official duty were as strong as ever, but there was nothing to do. The ships were the same year by year, and so were the drills. So there was nothing to learn, and as the ships were slowly being reduced in numbers, there were more officers than the necessities of each day's work demanded. Boyd, Seabury, and I idled away the days reading newspapers and playing "mumpletipeg."

Separated from the navy-yard proper by a channel perhaps two hundred yards wide was the "cobdock." Alongside the cobdock was the big old steam frigate *Colorado*; and on the other side of the cobdock from the *Colorado*, and about one hundred yards distant, was the old line-of-battle ship *Vermont*. These two ships together were under the command of Captain Gherardi, who had been my captain in the *Pensacola*, and were used as receiving ships. I received permission from the commandant to live on board the *Colorado*. There I had a comfortable state-room and lived in the wardroom mess. I stayed there for about ten months, and I have never had a pleasanter time. The mess was composed of about fifteen men, including a chaplain, two doctors, a marine officer, two engineers, and eight or nine line officers. As we were all in good health, had little to do, and had had experiences all over the world which we could talk about, we constituted a delightful club. There was some drinking, but it was almost wholly of beer, and no one ever became intoxicated. For the most part we spent the days on board, and in the evenings we would sally forth to make calls in New York or Brooklyn.

Going to New York was rather a serious thing in those days, because one had to go in a slow horse-car to the Fulton Ferry, usually wait about five minutes for the

next boat to start, then take the trip across, which lasted about seven minutes, and then go in a horse-car or stage in New York to our place of destination. Coming back was a still more serious undertaking, especially in cold weather, because the stages did not run very close together, and neither did the ferry-boats. But in those days people knew nothing about automobiles or telephones or Brooklyn bridges, and they were not made unhappy by slow transportation and communication, because that was what they were accustomed to.

In accordance with the suggestion of Commodore Shufeldt, I looked about for a manufacturer to supply my detaching-apparatus to the bureau of equipment, and I soon found a firm on Dey Street, whom I will call "Smith Brothers," because that was not their name. They made a number of apparatus, for which I got a royalty of \$12.50 each; but in less than a year I discovered that they were not putting good metal into the apparatus, and so I took advantage of a clause in the contract to close my agreement with them at the end of the year. Then I made a present of my patent to the bureau of equipment. Then a curious thing happened, in that the department soon ceased the plan of putting one apparatus of mine and one of Wood's into each ship, and put only those of Wood, which were made by an outside manufacturer. For some reason that I do not know, the navy-yards began to make my apparatus again a few years later, and to put it into ships, a procedure which they continued for a few years and then stopped again.

The firm of Smith Brothers was composed of two men who were brothers, but who were constantly quarreling with each other. I never knew them to agree at any time except one afternoon when, to my surprise, I found them in agreement in roundly berating a man who was talking with them. When this man went out I said, "Who is that?" and one of them answered, "That 's our brother."

I now became interested in an invention which I made, which I called an electric log, whereby a ship would tow

a sort of propeller by an electric wire; and every time the propeller made a revolution it would actuate a mechanism on board the ship, which at the end of every tenth of a mile would make an indication on a dial. I made some preliminary experiments at my own expense, which were so successful that the bureau of navigation of the Navy Department allotted me a small, but sufficient, sum of money with which to continue the experiments. I worked on this matter for two or three years.

One evening Lieutenant Boyd invited me to dinner at his house in New York. He had married a wealthy young woman, and had a very attractive residence. There was only one other guest, Mr. Park Benjamin, a classmate of Boyd's, who had resigned, and who was then editor of *The Scientific American*, though he was only twenty-eight years old. I have never been so fascinated by anybody in my life as I was that evening by Mr. Benjamin. He was by far the most brilliant man I had ever met, and I was carried away by his wit and epigrams and by his amazing knowledge of everything, it seemed to me, that there was to know.

A few days later I called on him at *The Scientific American* offices, and told him that I wanted to resign from the navy, because there was no chance in it of having any sort of career of any kind. I told him I was willing to do anything to get a start; for instance, to go on *The Scientific American* in any capacity whatever, including that of office boy. Benjamin told me that there was no chance anywhere for anybody except the chance to work like the devil; and that I had a good job, and had better hold on to it with both hands.

That summer there was a small epidemic of yellow fever at the yards. As I recollect it, nobody ever found out where it came from. Yellow fever was rife in the West Indies at that time, and the very general opinion was that somebody had brought the germs to the navy-yard from the West Indies in his clothing.

While in the *Colorado*, the idea occurred to me that, if

a ship would tow a small metal plate, secured at a certain angle to the towing-line, the plate would gradually descend below the surface of the water, and if the water was shallow, it could be made to strike the bottom, and give an alarm-signal on board ship. As with most of my inventions, I never got the opportunity to develop it; but it was brought out later under the name of the "sentry lead," and used for many years, until Sir William Thomson's sounding-machine was perfected. One day I went into the office of the commandant of the navy-yard, and explained my scheme, and asked permission to use the navy-yard tug to try it. The commandant said, "No." A few days later I was ordered to go with him to make an official call on a French flag-ship, anchored near the Battery. I went with the commandant in the tug, and we towed his barge astern; so that, when we got near the French flag-ship, the commandant could get into his barge and be pulled to the flag-ship by the sailors in the barge. When we arrived at the proper place, I had the tug stopped; and I told the coxswain of the barge to come alongside the tug. The coxswain was very lubberly about doing it; and for this reason, and because I was in bad humor at having to make the trip with the commandant, I gave the coxswain my opinion about his seamanship in real old navy style, with a few expletives as seasoning. Just as I finished my remarks, I realized, to my horror, that the commandant was standing at my left elbow. He put his hand on my shoulder, with a little pat, and said, "Mr. Fiske, you may have the tug whenever you want it."

That autumn Seabury and I tried to invent an instrument by which we could measure the altitude of the sun when the horizon could not be seen. That is, we tried to invent an "artificial horizon." We made two instruments, one in which a pendulum was used, and the other in which a spirit level was used. We had spent nearly all our spare money on this when Seabury told me one morning that he had been at dinner the night before at

the house of a very prominent patent lawyer, to whom he had explained our scheme; and that the patent lawyer had then told him that he had better not spend another cent or another minute of time on it, because it was scientifically wrong in principle. He told Seabury that hundreds of inventors had tried the same thing, but that it would never work on board of a ship because it would be affected not only by gravity, but by any change in velocity and by the rolling and pitching. For instance, if a glass of water were moved horizontally on a table, the level of the water would be disturbed even though the angle of the glass were not changed. Now the interesting part of this matter is not so much this particular incident, as the fact that, during the forty years that have intervened, inventions embodying the same erroneous idea have continually been brought to my attention. Almost exactly forty years after my conversation with Seabury, a man taking the scientific course at Yale University, and in the senior year, submitted elaborate drawings to me based on the same old misconception.

On the first of January four of us concluded to make New Year's calls in Brooklyn and New York, and in order to do so with becoming splendor, we decided to array ourselves in full-dress uniform. Early in the afternoon we called on the handsome daughter of Medical Inspector Bloodgood at the Brooklyn Hospital, and were much gratified to receive invitations from her to attend a "german," or cotillion, which she was about to give, and which I was then asked to lead. The german was held in due course, and there I met an extremely pretty girl with beautiful red hair, named Miss Josephine Harper, a daughter of one of the firm of Harper & Brothers. The hair of this pretty lady is now somewhat gray, and she has been my wife for six and thirty years.

The following February, I was ordered to the United States Ship *Powhatan*, then at the Norfolk Navy-Yard. Just as I was leaving the *Colorado*, little Walter Gherardi, now a captain in the navy, came on deck, dragging

by a string the type-writer which had cost me so many hours of thought and so many hundred dollars.

I went to Norfolk in a boat from Washington, and in the early forenoon I found myself standing in the bow of the boat looking ahead toward Norfolk, and especially towards the *Powhatan*, which I could discern at anchor a few miles ahead. Alongside of me I saw a handsome elderly gentleman, whom I recognized as Captain Fillebrown, her commanding officer. I introduced myself to him, and found him very courteous and pleasant. He was talking to me in an agreeable way when suddenly he stopped, and looked at his ship with an intense stare. Then he grasped my arm and exclaimed excitedly: "What 's that damn fool been doing now! I left the ship only a week ago, and the masts were white and the yards were black; and now he has painted them all yellow!"

I found, after getting on board, that the captain and executive officer disagreed professionally about almost everything; and that every time the captain went away for a few days, leaving the executive officer in command, the executive officer would take advantage of the opportunity to make all sorts of changes to suit his own ideas. The captain was a delightful, kindly old gentleman, but not burning up with energy; whereas the executive officer, Lieutenant-Commander McCalla, was a man who even in those days continually used the word "efficient," was very efficient himself, and was determined that everybody in the *Powhatan* should be efficient, including the captain. In those days the printed regulations were few and not very clearly expressed. Every ship was a little world by itself, and was regulated almost wholly by the captain, though in some cases conditions occurred like those in the *Powhatan*, when the captain was indolent and the executive officer energetic. Then things became very interesting and sometimes amusing.

Mr. McCalla became much interested in my electric log. The first time I tried it he came on deck to see it. I lowered the propeller by its wire, and some other kind of

small rope with it, the precise arrangement of which I do not recollect. The wire and the rope ran out together at high speed, and shortly after the propeller reached the water they began to twist up together in a remarkable fashion, and the wire and the rope became entangled with our feet. McCalla sang out lustily, and a sailor came up with a battle ax and cut the wire and rope, and permitted us to extricate our feet. McCalla then walked away without making any complimentary remark, and I did not try this particular invention again for a considerable time.

The *Powhatan* was an old side-wheeler that had been used in Commodore Perry's visit to Japan, and it was the most comfortable old tub in the service. Everybody knew she was not safe, and about once a year the Navy Department ordered her to be put out of commission. Then loud protests would go up from the admiral and the captain, reinforced by reports from naval constructors to the effect that she would last another year; and the department would rescind the order. Shortly before I joined, the old ship had almost gone down in an ordinary gale. But the dangers were soon forgotten, and the comforts of the old floating club-house sufficed to keep her from the junk-heap.

Naval officers in those days were accustomed mostly to work out in deep water, and were not one tenth as skilful in coastwise navigation as they are now. One beautiful afternoon we were going down Chesapeake Bay, and it became necessary to go around a buoy that was placed at the southeast end of York Spit. It was necessary to pass the buoy in such a way that it would be on our starboard, or right hand: if we tried to pass it in such a way that it would be on our left hand, we would run aground on the spit, which extended over toward the mainland. In this emergency the captain took charge. He stood on the hurricane-deck with a chart in his hand. The procedure was as follows: The captain would say "Starboard" to the executive officer; the executive offi-

cer would say "Starboard" to the navigator; the navigator would say "Starboard" to the officer of the deck; the officer of the deck would say "Starboard" to the assistant officer of the deck, who in this case was Ensign Fiske; Ensign Fiske would shout "Starboard" to Ensign Walling, who stood alongside the quartermaster at the wheel on the quarter-deck; Ensign Walling would say "Starboard" to the quartermaster; the quartermaster would say "Starboard" to the man at the wheel, and then the man at the wheel would put the helm astarboard.

This performance continued for a considerable time that bright and sunny afternoon, until a minute or so after the captain had given the order "Port," and the order had passed down the chain, and the helm had been put apart. But a minute or so after he gave the order "Port," *bang, bump*, and we knew we had run ashore on the spit that connected the buoy with the mainland. How this result had been achieved I have never been able to ascertain.

We backed as hard as we could, and "rolled ship" by making the men sally from one side to the other, but without avail. Then we carried an anchor out astern, with a hawser to the ship, and put the hawser around the capstan. Then the engines backed hard, and the men hove around on the capstan, but all to no purpose. Then the captain sent a boat ashore with a telegram to Washington, asking for assistance. Next day or the day after lighters came down from Washington. Then we worked all day and well into the night getting out guns so as to lighten the ship. Finally, after nearly three days of working and hauling on ropes, mostly in the rain, we got the ship off again.

After getting our guns back on board, we steamed down to Hampton Roads and anchored there. Anchored very near us was another ship, though which one I do not remember. At that time signaling in the navy, especially in the night-time, was an undeveloped art. At night the principal means was by waving back and forth, accord-

ing to a preconcerted code, a lamp that burned oil. This was very difficult, especially at sea; and when the ship was rolling and the wind was blowing hard, it was virtually impossible. About this time Lieutenant Very of our navy invented the so-called "Very Signals," which are still used in all navies, and which are very much like Roman candles, except that the "stars" are projected from pistols. This means of signaling is very good in some ways, especially when long-distance signaling is required; but it was very slow then, and, for reasons which it would take some time to explain, was liable to great errors. One night the *Powhatan* signaled some message to the ship near us. It was not really necessary to signal, because the night was so calm that a man with a good voice could have shouted the message, and it would have been heard on board the other ship. But signaling is often done for purposes of practice, and so the message was signaled by the Very Signals. The surprising answer came back, "Our commander is dead." So the *Powhatan* again signaled the same message as before. To this a long-drawn-out answer came back, "Our commander is ill." The *Powhatan* again repeated the original message, and the answer came back, "Our commander is absent." As more than two hours had already been consumed, a little dinghy was despatched with a note, explaining what the message was, and asking what the answer had been intended to be. The dinghy returned in ten minutes with a note saying that the answer returned each time had been, "I do not understand."

This experience gave me an idea about signaling, which I explained to Mr. McCalla, and to try which I secured his permission to make a crude apparatus. My idea, as I explained it to him, was to put a lamp behind an aperture which could be closed and opened by a shutter, and to operate the shutter by the hand in accordance with a preconcerted code; so that, if the beam of light were directed toward any point, a man at that point would

see a number of flashes, which he could read just as a telegraph operator reads a telegraph-sounder. For the purpose of ship use, my idea was to put the lantern in a box, and support the box in front of an operator by a strap over the shoulders. We arrived at Annapolis shortly afterward, and I got permission to take my lamp and box a couple of miles away from the ship in a dinghy, and to signal from there to the ship. So I went out and signaled toward the ship. It seemed to me that the scheme worked very nicely, and I fancied that the people on board must be pleased, to see what an efficient system of signaling had been devised. But I found on my return that nobody had taken the slightest interest in it, although they had seen the flashes plainly, and that "Fiske and his soap-box" had been a subject of great merriment. The idea was carried out afterward, however, and is now used in all navies in numberless forms.

From Hampton Roads we went to Norfolk, and anchored perhaps a mile from the navy-yard. One afternoon the executive officer sent for me and told me to take charge of a steam launch with a large scow in tow, which was then alongside of the starboard gangway; to proceed with them to the navy-yard; to hoist out of the hold of the old ship *Pawnee* a large water-tank, and to bring the water-tank to the *Powhatan*. I got the tank out of the hold without much difficulty by the aid of a derrick and a dozen sailors, and lowered it into the scow. The tank had a hole in the top called a "manhole," which was, roughly speaking, an ellipse in shape, about eighteen inches long and nine inches wide. Noting that the manhole-plate was not over the manhole, and seeing a manhole-plate lying on the floor of the hold where the tank had been, I took the manhole plate back to the ship also.

The next morning I was called very early with the disquieting information that the executive officer wished to see me on the quarter-deck immediately. I went there at once, and saluted the executive officer, who returned the salute. Then the following conversation ensued.

"Good morning, Mr. Fiske."

"Good morning, sir."

"Did you bring that tank back to the ship?"

"Yes, sir."

"Did you bring that manhole-plate also?"

"Yes, sir."

"Put the manhole-plate over the manhole."

I compared the size of the two with my eye, and saw that the manhole-plate was about half the size of the manhole which it was designed to cover; so I said, "It is too small, sir."

"Take the steam launch immediately, sir, and get a manhole-plate of the correct size."

"Aye, aye, sir."

We proceeded from Norfolk on a cruise around the island of Cuba. I do not remember much about it except that it was intensely hot, that we cruised very slowly indeed, about four knots an hour, and that there was almost nothing whatever to do. There were a pleasant lot of us, however, in the steerage,—about a dozen,—and we whiled away the hours in "chucking dice" for beer, and then drinking the beer. Previous to starting out, each of us had subscribed a little money, and with the aggregate amount we bought some white enamel paint and some gold and blue and red paint also. Then we transformed ourselves into artists, and painted that steerage in the most wonderful way. The crowd of fellows in that steerage at that time was the most united, joyous lot of young men I was ever with. It would be invidious to compare one with another, but the man who was the most popular was the young doctor, Daniel Guitéras, who united with a boyish and delightful buoyancy an ability to sing pretty Spanish songs, and the extraordinary talent of imitating a brass-band with his mouth.

Our tiresome trip came to an end, as tiresome trips always have done, and we soon found ourselves at anchor off West Twenty-Third Street, New York. In those days

the river was not so full as it is now, and many sail-boats used to go back and forth across its surface, especially on Sunday afternoons. One Sunday afternoon when the breeze was fresh, a pleasure-boat, coming near the *Powhatan*, capsized, and dumped four women and three men into the water. The tide was running swiftly, but we got our steam launch to them quickly, and brought them all on board the *Powhatan*. A wet and frightened set they were. We put each one of them into the bunk of some officer who had gone ashore, and sent their clothes down into the fire-room, to be dried by the heat of the furnaces under the boilers.

Not long after that we were coaling ship. About half past nine one forenoon we had just discharged one lighter; and it was lying alongside the port side, when I was told to tow it ashore by our steam launch to a dock in Hoboken and secure it there. As the wind was blowing fresh, and the tide was running strong toward the southward, another launch was called for from the *Swatara*, near by. The launch came promptly, and Ensign Brumby was in charge. Brumby was, years afterward, the flag lieutenant of Admiral Dewey, and it was he who first hoisted the flag of the United States over the Philippine Islands at Manila.

Brumby was junior to me, so I took charge. I secured the *Powhatan's* steam launch at the forward end of the lighter, and the *Swatara's* at the rear end, and told Brumby to stand on the scow abreast of his launch, while I stood abreast of mine. Then we cast off, and away we went. The wind was blowing half a gale, and the lighter was so light and so high, that it acted somewhat like a leaf on the ground. We waltzed around on the surface of the river in the most bewildering way, going ahead, then sidewise, and then back, turning to the right, and then reversing, all at the whim of the wind, restrained by whatever force our little launches could exert. At one period I saw just below us the daintiest possible white steam yacht, with booms rigged out both sides, and a boat

at each boom; and in my mind's eye I saw my monstrous lighter smashing the yacht up like kindling wood, and being smashed itself, and Brumby and me, with our steam launches, involved in a general ruin. But by means of backing with one steam launch, and going ahead with the other, we managed just to miss the yacht, and then to turn round and round, and drift past the yacht meanwhile, to the evident amazement of the people on board of it.

Shortly after this I was detached and ordered home, and I again made the violent transition from life in the steerage of a man-of-war to the sober quiet of a parsonage.

I spent most of my time there in the daytime, as I had always done, in my father's library. He had a good library, and I found there that peculiar and satisfying companionship with the great and good people of the past and present that can be found nowhere, except in a library.

As the days went by there, I thought a great deal about the most conspicuous figure in the *Powhatan*, the executive officer, Lieutenant-Commander McCalla. We all hated him when I left, but I began to see that the principal reason was that McCalla had a much higher ideal of duty than we had and a much clearer view of what a navy ought to be. In later years all officers came to realize this, and to realize also that, despite certain defects of character and an undue arbitrariness, McCalla was a man far in advance of his time.

CHAPTER VI

LEAD-PENCIL, *TALLAPOOSA*, *SARATOGA*, MARRIAGE,
ELECTRICAL ENGINEERING

I STAYED at home about three months, passing the time agreeably, but very quietly indeed. About the first of October I realized that I was not gaining much professional experience, and so I applied for orders to sea. In those days there were not enough ships in commission to employ many officers, and the nearest to sea that I could get was the receiving ship *Colorado*, aboard of which I had lived before, and which was still moored to the wharf at the navy-yard in New York.

Captain Gherardi was still on board with his family, which consisted of a delightful wife and two fine boys, Bancroft and Walter. Bancroft became an electrical engineer, and has been for many years now in charge of all the telephones of Brooklyn; Walter is captain in the navy. About the time that I rejoined the *Colorado*, Mrs. Gherardi told me that at dinner the night before Bancroft had said to his younger brother: "You ought not eat up all the dessert, Walter. You ought to save some for Bridget, because she will die first." Bridget had been the nurse of Mrs. Gherardi when she was a child, and had afterward been the nurse to Mrs. Gherardi's children. A few years after the time of the admonition given by Bancroft to his brother, his prophecy was fulfilled, and Bridget died. She left five thousand dollars to Bancroft and a like amount to Walter, the savings of a lifetime.

While on board the *Powhatan* I had invented two kinds of mechanical lead-pencils and secured patents on them. Eberhard Faber now undertook the manufacture of both

lead-pencils; at my suggestion one was named the "Citographic" and the other the "Monitor." The Citographic was put on the market first, but was very speedily taken off, because of an injunction secured by the American Lead Pencil Company on the perfectly correct ground that it infringed the claims of a patent which I had not known about, but which covered the well-known lead-pencil in which a lead moves freely in a tube, and is clamped and unclamped by operating a spring with the finger. With the consent of Mr. Faber, I sold my patent to the American Lead Pencil Company for the price of the patent and attorney's fees. The Monitor lead-pencil came along later, and it at first promised to be a tremendous success, for it sold at an increasing rate during the first three months, at the end of which my royalty was a thousand dollars. Mr. Faber was much encouraged, and started to construct the machines to get the pencils out in large numbers, when suddenly the sales fell flat, for the excellent reason that it had been found that if anybody dropped a Monitor lead-pencil, the lead would break. No way was ever found to rectify the difficulty, and the people soon afterward forgot about the Monitor lead-pencil.

During the previous year and a half I had gone ahead, whenever an opportunity offered, with my electric log; and sometime in the autumn I secured permission to make a trip in the old side-wheel steamer *Tallapoosa*, which then went up and down the coast carrying navy freight under the command of Lieutenant McRitchie, an officer who had come into the navy during the Civil War. McRitchie was an excellent seaman and a fine man in every way, but he was a little excitable. A few months before this time, when alongside of the wharf at the Washington Navy-Yard, the Secretary of the Navy had come aboard, and McRitchie conceived the idea of showing him the beauties of my boat-detaching apparatus, which had been fitted to a whaleboat of the *Tallapoosa*. McRitchie climbed up into the boat, which hung about

twenty feet above the water, and said, "Now, Mr. Secretary, you see I take hold of this lever with my right hand, and pull out the safety-pin with my left hand, and then pull up the lever." In his excitement McRitchie did pull up the lever. Down went the boat with a crash, and McRitchie in it. They put McRitchie into his bunk carefully, and he was all right again in a few days.

I towed my electric log astern of the *Tallapoosa* with gratifying results from New York to Portsmouth, New Hampshire. The *Tallapoosa* at that time was described in the newspapers as "the terror of the seas," because she always seemed to be colliding with some schooner. Sometimes a newspaper would print, "Warning to Mariners; the *Tallapoosa* is going to sea!" The officers on board the *Tallapoosa* said the schooners were always getting in front of the *Tallapoosa* in order that there might be a collision, and consequent big damages from the Government.

I remember only two incidents of the trip. One incident was being aroused from my slumbers in the night by a stentorian voice shouting down the engine-room hatch: "Back her! Back her! Back her like hell!" The other incident was meeting a classmate of mine who had been bilged from the naval academy for striking a colored man with a hatchet, and, in company with him, a young marine officer. We had dinner together at some restaurant in Portsmouth, and my companions began to drink so copiously that it put me on my guard, and I drank very little. But I had a fine time that evening trying to keep them from such conduct as would get them arrested. Finally I got them safe down to the waterfront and on to a float, from which they were to get into a boat to take them to the opposite side of the river. The tide was rushing by very fast, and the float and the boat were jumping about so that I became fearful that they might fall overboard and be drowned. My anxiety was not allayed by their getting into a dispute, then into a fight, and rolling about together on the float.

That they ever got into the boat safe one must attribute to the Providence which is said to watch over drunken men.

Shortly after my return to New York, I met at the navy yard one day Captain Fillebrown's successor as captain of the *Powhatan*, Captain Braine, and he gave me a ticket which he had just received for the Charity Ball in New York. I went to the ball, and there, to my delight, I met a very pretty young lady with beautiful and abundant red hair, dressed in a light blue dress, the same Miss Josephine Harper whom I had met a year before. She sat in the box with Ex-Governor Tilden, but she descended from the box at frequent intervals to dance with me.

Shortly after this my promotion to the grade of master became due, and I presented myself in Washington for examination there. I passed the professional, mental, and moral examination without trouble but the doctors hesitated sometime about passing me physically. They said I had organic heart disease, but that it had not progressed very far. Finally, they agreed to pass me, but warned me against taking any violent exercise or becoming excited in any way. Anybody who has been told by a physician after careful examination that he had organic disease will know how I felt.

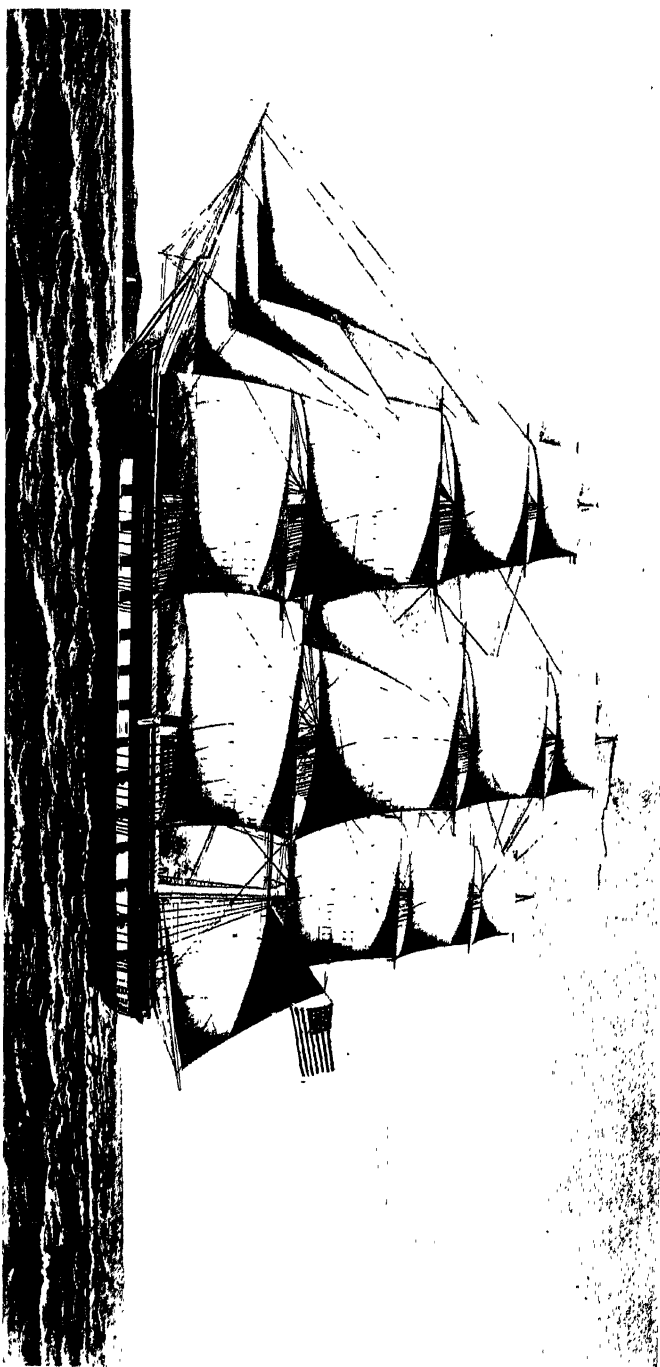
I went back to New York, and resumed my pleasant life on board the *Colorado* a considerably sobered man. We began about that time to give a series of hops on board, and to these hops we invited, among others, Miss Josephine Harper. She came, and on leaving invited me to call, giving as her address 562 Fifth Avenue, northwest corner of Forty-Sixth Street. I called shortly after, and found that she lived in a beautiful house, amid all the surroundings of wealth and taste, with a very attractive father and an extremely pretty mother. Shortly before this one of my relatives had got into a scrape such that, in order to get him out, I had agreed to let him have a sum of money every month. The result was

that my finances were in very bad condition, and I realized that I would have to go through the winter with an old and rather shabby spring overcoat. About this time I was invited to dinner one Sunday by Mr. Harper. I did not think much about my overcoat until I was invited to go to church with the family at St. Thomas's; but I can remember now how uncomfortable I felt walking up Fifth Avenue that bright winter afternoon in a shabby light overcoat, in company with a beautiful and beautifully dressed young lady and the head of the firm of Harper & Brothers.

Soon after that I realized that I was becoming extremely interested in a young lady who had been brought up with little need for expert knowledge as to the value of a dollar, and that it was the worst kind of folly for me to think about her at all except in the most matter-of-fact way. I determined several times to apply for orders to sea, but I never did apply. Instead of that I kept calling at 562, and late in the afternoon of St. Valentine's Day I found myself leaving the house with the happy, yet stunning, realization that I was engaged to be married!

I was in no position to be engaged to anybody, especially to a young lady habituated to wealth. My pocket-book was almost flat, and I was at the bottom of the master's list in the navy, with no prospect whatever in life except that of very slow promotion, poor pay, and a lifelong alternation of three years on shore and three years at sea. This prospect was gloomy enough; but as it was mostly of a distant future, it did not concern me so much as did the immediate situation, and the problem of how I was to be able to act as an engaged young man in New York, buy an engagement-ring with a diamond in it, and go through the expenses of getting married without any money. I was saved about two weeks after my engagement occurred by receiving, as royalty on my lead pencil, a check for a thousand dollars from Faber.

In the early part of October I was broken away from



© E. Mullen.

U. S. S. SARATOGA

my pleasant sojourn in New York and the society of my fiancée by orders to the old sailing ship *Saratoga*, the same one in which I had made my plebe cruise. I remained in the *Saratoga* only three months, during which we took part in the ceremonies of the centennial celebration of the surrender of Cornwallis. The principal feature of interest in the cruise to me was the acquaintanceship I formed with one of the most beautiful characters I have ever met, Commander Henry C. Taylor, who was the captain.

About ten years before, Taylor had been ordered to the Naval Academy as one of the instructors in mathematics. The first day that he appeared before the section in which I was, he presented an appearance at once so pretty and so effeminate that we midshipmen exchanged knowing glances with one another. He had a low, sweet voice, an extremely courteous manner, and a general lady-like appearance in every way. At one stage of the recitation a midshipman whom we will call Smith made a mistake; and seeing that Mr. Taylor realized it, Smith tried to make it appear that he had really not made a mistake. Smith was the wit and bully of the class, and we watched his manœuvres with interest. Mr. Taylor replied to Smith's manœuvres with a series of questions, put in a very courteous way. Finally, Mr. Taylor said something like this:

"Then, Mr. Smith, if I understand you aright, and pray correct me if I do not, you admit to me and to the company of gentlemen here that you made a mistake in your answers, and that you tried to bluff and mislead me into believing that you had not made a mistake. Am I correct in so understanding you, Mr. Smith?"

"Yes, sir."

"Do you think that that was an honorable and officer-like thing to do?"

"No, sir."

"Do you think that it was a dishonorable and unofficer-like thing to do?"

“Yes, sir.”

After that we never tried to bully or bamboozle “Harry Taylor.” We came to have the greatest affection and admiration for him, and we and the entire navy always had those feelings for him until he died, as chief of the Bureau of Navigation, about 1903.

One day in conversation with Commander Taylor in his cabin on board the *Saratoga*, he said to me, apropos of some matter we were discussing:

“It is a question of foresight.” I had never thought much about foresight up to that minute, and I said foolishly:

“Captain, do you think that human beings have foresight? Men nowadays do not have the gift of prophecy.”

I do not remember his answer in words; but the substance of it engraved itself on my memory, and is one of the few remarks of men to me that have had an influence on my life. Taylor said in substance:

“No, Mr. Fiske, men do not have the gift of prophecy. But men are so constituted that those of one generation are much the same as those of the generations that preceded them, and are apt to do similar things, modified by circumstances; and this is especially true of large crowds of men. You know it is an old saying that history repeats itself. As I understand it, this does not mean that the events which happen during one generation are exactly the same as the events which happened during the past generation; but it does mean that, under similar conditions, large bodies of men act similarly. You remember that, in mathematics, when you draw a line on a piece of paper which shows that something is moving in a certain direction in obedience to a certain law, you realize that it will continue to move in that direction unless some force from the outside changes it; and that that is substantially the “first law of motion.” Therefore, if we can determine, even approximately, the forces which control a certain movement, we can predict at least approximately the direction in which that movement will

proceed. This ability to predict approximately is what I call to myself 'foresight,' and I have come to believe that one of the greatest causes of failure, especially when the movements of large bodies of men are concerned, results from lack of foresight, and from a failure to realize that we can tell the probable course of events if we can find some set of conditions in the past like those present now. Of course, if you can find in history conditions very much like them, you can then ascertain the measures which were then applied and note their success or failure; then, in the light of that experience, you can decide on the measures you should adopt."

Taylor lived about twenty years after this. He carried out in his own studies and practice the principles I have tried to indicate, and he became, after Admiral Luce, our navy's principal guide in strategy. While all the navies owe an enormous debt to Admiral Mahan for calling the attention of the world at large to the influence of sea-power on the prosperity of nations, our own navy owes more to Admiral Luce and Admiral Taylor than to anybody else for determining and demonstrating the direction in which the development of our navy should be prosecuted, and then insisting that that direction should be followed.

On board the *Saratoga* the characteristic of our captain of always trying to see ahead had one curious, but natural, effect. In port, and at sea when everything was proceeding smoothly, he was always on the lookout for something to happen, and would worry the officer of deck continually about all sorts of things. But when things were bad, as they were one night during a tremendous southeast gale combined curiously with a dense fog off the southern coast of Long Island, in the path of the steamers going both ways, Taylor stood on the horse-block all night, calm, cool, and buoyant. He always worried, when things were all right; but, and *probably for that reason*, he was magnificent in emergencies.

I secured my detachment from the *Saratoga* about the

first of January, 1882, and orders to the old steam frigate *Minnesota*, then stationed at Newport, because I wanted to be married. The *Minnesota* was a gunnery-training ship, and part of the training squadron which Admiral Luce had organized for educating and training seamen for the navy. Luce was undoubtedly the best naval officer, in the large sense of the word, whom our navy has ever produced. Taylor was a pupil of his, and so was Mahan. Luce realized that the further the education of the enlisted man could be pushed in the proper direction, the better each man would be, and therefore the better the navy would be. He had a keener insight into what a navy ought to be than anybody else in our navy or any other.

One afternoon while I was officer of the deck of the *Minnesota*, a sailing-boat capsized not far away, and I sent the steam launch to the rescue. The sailing-boat contained a Mr. Stokes, a wealthy summer resident of Newport, some of his children, and two sailors. Our launch saved everybody by a narrow margin, except one sailor, who was drowned. The next evening, when I was again officer of the deck, a boat came alongside, and a handsome elderly man came on to the deck and said, "Permit me to introduce myself, sir; I am Mr. Stokes." The Stokes-Fiske murder flashed through my memory, and so I said, "And I am Mr. Fiske." Mr. Stokes drew himself up as if he did not like my levity; but as I retained an unmoved face, he unbent and said, "I am very glad to meet you, Mr. Fiske." This little story got abroad, and for some time afterward in Newport, one man meeting another would occasionally say, "Good morning; I am Mr. Stokes," and the other would reply, "Good morning; I am Mr. Fiske."

I was married in St. Thomas's Church, New York, on February 15, 1882. The wedding was declared to be very splendid, the beautiful church and the uniforms of the officers making a fitting setting to the beauty of the bride and charming appearance and costumes of the brides-

maids. The last time I ever saw Governor Tilden was at the reception which followed later at the residence of the bride. He was very feeble, but he jocosely accused me of having "cut him out," it having been a joke between him and Miss Harper for sometime past that they were engaged to be married.

After a brief honeymoon, I went back to Newport with my bride, and took up life again aboard the *Minnesota*. In the latter part of the summer, because repairs were needed to the ship, we steamed from Newport to New York, taking advantage of good weather in order to make the trip in safety.

About this time my old ship the *Powhatan* went through a gale, during which she came so near sinking that, when she finally limped back to Hampton Roads, she was in such bad condition that the department finally determined that she must go out of service forever. So the department ordered her to proceed to the Norfolk Navy-Yard and go out of commission. The usual influences then got to work, and the department was induced to modify its order, and direct that the *Powhatan* go to New York and go out of commission there. So the *Powhatan* started from Hampton Roads for New York. Things went pretty well until she was perhaps fifty miles from Sandy Hook, when bad weather came on. Whether she would ever get around the Hook or not became the question, and a very serious one. Finally she did get inside the Hook, and she did drop her anchor in safety, much to the relief of everybody on board. But hardly had the anchor reached the bottom, when the tops of the furnaces gave way, and the *Powhatan* became a helpless hulk. Tugs were then sent from the navy-yard, and the old tub was towed, an abject and dejected figure, to her doom.

While on board the *Minnesota* the idea occurred to me of making a breech-loading musket on the same principle as that of the machine-gun which I had proposed to the Bureau of Ordnance in 1877, but had had no opportunity to develop. I had the intention, of course, of attaching a

magazine to it later, in case the breech-loading apparatus worked well. By this plan the motion of the bolt forward and back was given by turning a little crank; so that the motion was the reverse of that of a reciprocating steam-engine. No trigger was needed, because the revolution of the crank beyond a certain safety-stop, which was pushed in by the right thumb against a spring, caused the firing-pin automatically to slip off a cam, and fire the gun. Just as I was becoming interested in this, I received a letter from the Bureau of Navigation, informing me that the trials held of my electric log had been successful, and that the bureau was prepared to adopt it for the service if it could be furnished in quantities at a price sufficiently low. I was so interested in my gun, however, that I delayed answering the bureau's letter. In fact, I have not yet answered it, and the electric log was developed later by other people.

My breech-loading gun worked very well indeed. I could fire twenty-four shots a minute with it, and I found it extremely accurate in firing at a target, because the movement of the crank necessary for firing did not throw the sight off the target so much as did the pulling of a trigger. One day shortly before the *Minnesota* left Newport, I was on the forecastle firing my gun out into the water. There were very few men on board, and nobody was on deck with me except Lieutenant Bartlett, who had a watch in his hand, and was counting the number of shots I could fire in a minute. Bartlett was standing about ten feet from me, when, by clumsiness on my part, the gun went off, and landed a bullet in the deck between Bartlett's feet. Bartlett and I then vowed to each other that we would keep this secret always. Bartlett died several years ago. I think he kept my clumsy act a secret till he died.

The *Minnesota* went to New York shortly afterward, and when I obtained my year's leave, I sent my musket to the Bureau of Ordnance for inspection. When I went to the bureau later, it was still there in company with

other suggested guns of novel types. Lieutenant Couden advised me to submit my gun for the consideration of the Italian Army, saying that Italians would be especially adapted to using it, because of their practice in turning the handles of hand-organs.

Since 1865 the navy had been pursuing the downward path, and now (1882) she had reached the bottom. No attempt whatever had been made to resist the process of degeneration and decay, the principal reason being the "swing of the pendulum" that always sets in after every extreme condition of any kind; for instance, after every war. The people of the country, North and South, had suffered so much from the Civil War that they made themselves believe that war was a "relic of barbarism," and that it would never come again, at least to so enlightened a people as those of the United States. Even in the army and navy there was a general acquiescence in this proposition; and if it had not been for a few men like Luce in the navy and Upton in the army, who besides being students of history had the moral courage and the mental courage to disagree publicly with the pacifist attitude of the time, the army and navy would have sunk even lower than they did.

Of course I did not realize these things at that time; but I did realize that the navy was an extremely uninteresting place for a man who had already learned virtually all there was of the naval profession, and who could see no prospect ahead except a tiresome alternation of monotonous cruises at sea and profitless tours on shore. Just then, in the autumn of 1882, two inventions in electricity showed the promise of the future to any one who had pondered even a little about what Commander Taylor had said regarding foresight. These inventions were the electric light and the telephone.

I went for advice to Mr. Park Benjamin, who had resigned from the editorship of *The Scientific American*, and had, with his brother, Dr. George H. Benjamin, established an office as scientific expert on Broadway, opposite

the post-office. I told Mr. Benjamin what I was thinking about, and he said in effect:

"That 's just the right thing to do. Whether you stay in the navy or not, it will do you a lot of good to know all about electricity. Electricity is the coming thing, and it can be made very useful to the navy; so if you jump right in now, you 'll be able to do a lot for the navy in showing it how to use electricity. If you don't know how to start, come right in here, and help me and my brother. We won't give you any salary; but you can study my books, and we are engaged in such a lot of new work that you can get into touch with the electrical movement right away."

I applied for six months' leave from the Navy Department, saying that I wished to study electricity. Commodore John G. Walker, a splendidly able and progressive man, was then chief of the Bureau of Navigation. Commander McCalla was his assistant, and I recalled the fact that when I left the *Powhatan*, McCalla had said to me in effect:

"Mr. Fiske, I do not approve at all of a good deal of your conduct while you have been in this ship. At the same time I recognize in you a mind of considerable originality, and if I can ever do anything for you, you will do me a favor if you will request me to do it." So accompanying my letter to the Bureau of Navigation, I sent an unofficial letter to Commander McCalla, explaining it. By return mail I got a letter from McCalla, telling me that he had submitted my request to Commodore Walker, recommending that he grant it, and that Walker had replied, "Tell Fiske that six months is n't enough, tell him to ask for a year."

Of course I did so, and of course I got the leave. I started in at once. At this time the telephone had been in existence six years since the time its ability to transmit speech had been demonstrated at the Centennial Exposition in Philadelphia, and it had been declared by most people to be "a toy." Very few telephones were to be seen, and the use of whatever telephones there were in

use was extremely exasperating. However, coming events were casting their shadows before, and several companies were trying to put telephones on the market, which they declared did not infringe the Bell patent. Among these companies was the Drawbaugh Company, of which Mr. Benjamin was the patent attorney. The arc light (that is, the large, flickering electric light used to light streets) was fairly established, especially the Brush light; but the incandescent light, for use in interiors, was struggling for existence. The Edison Company had established a little plant on Pearl Street, and there a small dynamo turned around most of the time day and night, supplying light to a small district near by at the expense of the Edison Company; and Mr. Hiram Maxim had installed some lights on the ferry-boats that plied between New York and Jersey City. But despite those facts, the practicability of the incandescent light for general use was scoffed at. Professor Henry Morton, the president of Stevens Institute in Hoboken, for instance, was an utter disbeliever in it, and declared so in speech and writing though he defended Mr. Edison from the charge of being like Keeley, a charlatan and impostor. President Morton said that the trouble with Edison was that he didn't understand scientific and engineering matters; that he was simply ignorant. Mr. Morton was a man of such influence that his estimate of Edison and of the electric light was generally accepted.

I stayed in Mr. Benjamin's office only three months. It was intensely interesting, but I soon began to see that I was out of place; and when I suggested this to Mr. Benjamin one day he said:

"Yes, Fiske, I think you are. In fact, I don't know what some of my clients would think, who realize how many important patent secrets are in this office, if they knew that you are hobnobbing with electrical people everywhere and visiting electrical companies. The pursuit of information is very laudable on your part, doubtless, but it might excite their suspicions."

So I borrowed four hundred dollars from my mother, and hired an office in the old Astor House as "Consulting Electrical Engineer." This may seem a rather presumptuous action on my part, but it really was not so, because I realized that I knew more about practical electricity, as connected with its science, than most other people did. I had had an excellent education in mathematics and the physical sciences at the naval academy and a fair acquaintanceship with mechanical apparatus; whereas very few of those interested in the electrical movement then knew more than the theory or the practice. They could then be divided with fair correctness into three classes: first, the professors in the colleges, who knew nothing whatever about the practical uses or apparatus of electricity, but whose knowledge was confined to laboratory apparatus, which did not include any new inventions in the electric light or telephone; second, employees of the Western Union Telegraph Company, who knew nothing of scientific electricity, but knew all about the only electric apparatus then in general use, which was telegraph apparatus; third, a number of half educated men, possibly one thousand, who had some knowledge of machinery, a good deal of ability, and superabundant energy, and who were trying to invent, or to make in a haphazard way, electric dynamos, electric lights, and telephones.

I made just about enough money to pay my office rent. I became infatuated with electricity, whose coming wonders dazzled me; and I studied and wrote nearly all the time. But I could not make much real headway. I underwent periods of extreme discouragement. I remember one day when I was feeling particularly blue receiving a copy of the *London Electrician*. I looked with reverence at the scientific articles in it and at the names of the great men who wrote them, wishing that I could be like them; when suddenly I saw my own name standing out in letters that looked six feet high. There, to my intense astonishment, I saw more than a page of the

London Electrician taken up with a copy of an article by me that I had published in some American paper! The revulsion of feeling from intense discouragement to intense encouragement was so strong that I walked about for hours thereafter in an unfamiliar world, with unfamiliar hopes and dreams.

About this time a tall, good-looking man, with his overcoat carried over his arm, came into my office and introduced himself as Mr. Samuel D. Mott. He said that he was a draftsman, and had made many of Edison's drawings for him; but that now he wanted to start off "on his own hook," and that it had occurred to him that he might get desk room in my office. I told him that I was paying twenty-five dollars a month rent, and that I would be glad to give him desk room if he would pay me ten dollars a month. He said that he would, and so in he came.

Having had occasion to test the resistance of some insulators around which telegraph wires were secured on telegraph poles, an idea occurred to me whereby the resistance between the wire and the insulator might be increased and the leakage decreased. I talked the scheme over with Mott, and we agreed to take out a patent together on it. This we did. The insulator about a year later was put on the market, under the name of the Fiske-Mott Insulator, by the Chicago Insulating Company. About that time I had to go to sea, and I sold my half of the patent to the company for a hundred dollars.

In the spring it occurred to me that, although there were a number of books written on electricity, there was no book on what we now call "electrical engineering"; that the existing books could be divided into two classes, mathematical treatises on electricity and books giving rules of thumb by which to make electrical apparatus. So I concluded to write a book that would try to bridge the gap between the two classes. It occurred to me to ask Harper & Brothers to publish the book when I had finished it; but that idea made me feel uncomfortable, and so I decided not to do it. I worked for four months al-

most continuously on the book, and when it was finished I took it to D. Van Nostrand, sometime in August. I showed it to the venerable old publisher literally with "fear and trembling," but he accepted it almost immediately. He said that he had been wanting to get a book such as I had written, and that as soon as his readers had passed it, he would get the book out just as quickly as he could print it.

The book came out in the latter part of October and was a success from the start. The reviews were all favorable, and most of them commented on the clearness of the style. It ran through ten editions quickly, and sold, though at a gradually decreasing rate, for twenty-two years.

I have always been sorry that I was never able to revise the book, as the publishers continually urged me to do. But on the first of October I had to decide whether I would go back into the navy or resign. Of course I ought to have resigned; but I was married, and all the family on both my side and my wife's side urged me not to do so. Their principal argument was that my health was so precarious that I might break down at any time and have no means of support; whereas, in the navy, the retired list was always waiting for me, with its small, but certain, pay.

So I wrote to McCalla, and received a reply from him, asking me if I would like to go to the Electrical Exposition at Vienna as the representative of the Navy Department. After talking this over with my wife, I wrote back the next day, saying I would be very glad to do so. The first of October approached rapidly, and with it the end of my leave, and I was making preparations for going to Vienna when I got another letter from McCalla, saying that, when my orders to Vienna were presented to the secretary for signature, the secretary said he had already promised such orders to Lieutenant McLean.

McCalla expressed his regret, but said that he had gone to Commodore Sicard, the chief of the Bureau of Ord-

nance, with the suggestion that my knowledge of electricity, especially of the new things in it, would make me a valuable member of the bureau, and that Sicard had agreed, and asked McCalla to have me ordered to the bureau, if I wished. McCalla closed his letter by urging me to accept the position offered. I accepted, and orders came to report to the chief of Bureau of Ordnance on October 1.

CHAPTER VII

BUREAU OF ORDNANCE AND FRANKLIN INSTITUTE ELECTRICAL EXPOSITION

MY wife and I arrived in Washington on September 30, the day before I was to report for duty in the Bureau of Ordnance, and took up pleasant quarters in a large boarding-house at 823 Vermont Avenue, directly opposite the Arlington Hotel. Shortly after, a cousin of my wife's visited Washington and stopped at the Arlington Hotel. Before leaving New York, he secured her address, and one afternoon he stepped out from the Arlington Hotel and said to the driver of a carriage:

"How much to take me to 823 Vermont Avenue?"

With great presence of mind the driver answered, "Two dollars."

Cousin John, being a business man, and knowing the value of having business matters carefully arranged, said:

"Very well, I will give you two dollars and no more. Now take me to 823 Vermont Avenue by the most direct route."

So he got into the carriage, and was driven directly across the street to a house that had the figures 823 above the door. Cousin John realized the situation, and gave the driver his two dollars and a good cigar besides.

The next day I reported for duty in the bureau. Captain Sicard was chief of the bureau, and as such had temporarily the title of commodore. Commander Sumner was the senior assistant and occupied a room by himself; but the real work of the bureau was done by Sicard himself, assisted by Lieutenants Couden and Buckingham and Ensign Alger, three exceptionally able men.

There were two rooms for the draftsmen, one room for the chief clerk, another room for other clerks, and two for the four officers. Sicard was a splendid man in every way, but he spent too much of his time with details. He had a fine mind, however, and though he was slow, he almost never made a mistake. There are few men to whom the navy owes so much as it does to Sicard.

The Navy was just beginning to pull itself out of the comatose condition into which it had fallen; but it was so far behind, especially in ordnance and gunnery, that the work of reconstruction had to be radical and begin at the bottom. Virtually all the old ordnance was useless for the purposes of modern war, and there was nobody in the United States who knew anything about the new ordnance except from reading about it. The live men of the navy, like Luce and John G. Walker, had finally roused certain congressmen and others to a realization of facts, and the "Naval Gun Foundry Board," under the presidency of Rear-Admiral Simpson, had been sent to Europe to study and report on modern methods of manufacturing steel and steel guns. Furthermore, a system had been started a few years before, on the initiative of Cadet Engineer Francis T. Bowles, whereby men who graduated near the heads of classes at the Naval Academy were sent to naval construction schools in Great Britain and France to learn the art of building naval ships. The Naval Advisory Board also had been established, and was still in operation. The president was Commodore Shufeldt, and the secretary was Assistant Naval Constructor Bowles, who was one of the first graduates of the system that he had initiated. This system with certain modifications continues to the present day, and is the cause of the excellence of our corps of naval constructors.

The navy was in a deplorable plight. The principal reason, of course, was the belief through the country that war would never come again; but part of it could reasonably be laid upon the shoulders of George M. Robeson,

the previous secretary of the navy. He had been a lawyer in New Jersey, but I have never heard that even as a lawyer he had achieved such a reputation for ability and character as to warrant his being placed in supreme control of the naval defense of the United States and intrusted with the responsibility of making decisions in the complicated cases that naval administration constantly brings up.

A feeling had gradually developed through the country that Robeson was personally dishonest, and that he received large sums of money for his personal benefit from contractors, especially from a contractor named Secor, who built and repaired some ships. The New York *Sun* usually spoke of him as "The Honorable Secor Robeson," and this name stuck to him so tightly that some people forgot what his first name really was, and one naval officer is said to have addressed an official letter to him by that name! It is quite probable that the accusations were not true, but the fact that they persisted for many years injured the navy exceedingly. Reports were current that many a congressman would remark, "I am perfectly willing to vote money for the navy, but I am not willing to vote money for Secor Robeson."

In March, 1881, Judge William H. Hunt had become secretary under President Garfield. Judge Hunt was a man of high character and ability, and as he had a son in the navy who was a lieutenant, he was really interested in the navy. One of his first acts was to secure the consent of President Garfield to the appointment of a naval advisory board to consider and report on what should be done to rehabilitate the navy. Congress authorized the construction of certain ships in 1882; but the death of Mr. Garfield, followed by the accession of Mr. Arthur to the Presidency, and his appointment of Mr. William E. Chandler as Secretary of the Navy brought about the appointment of a second advisory board, authorized by Congress in 1882, with a personnel different from that of

the first board. Mr. Chandler, like Judge Hunt, had a son who was an officer in the navy, so that he also was actually interested in it. He was entirely free from any suspicion of financial dishonesty and was an energetic and forceful man, and though he had not been educated in scientific or engineering lines or had much experience in administration, he was the instrumentality for accomplishing a good deal.

The navy was exceedingly fortunate then in having as chief of the Bureau of Navigation, and therefore as the principal professional adviser to the secretary, Captain John G. Walker. Walker was a man of clear and broad mental vision, excellent judgment, and great force of character; besides, he had recently had the advantage, when on extended leave, of a few years' experience in a high administrative position in a railroad—I think the Chicago, Burlington and Quincy. Walker and Sicard comprised a very good team, Sicard offsetting by his possibly too great prudence and his engineering type of mind any tendency of Walker to go to unwise extremes. These two men, and especially Walker, were able to impress Mr. Chandler with the necessity for building up the navy from the national point of view. In those days, to a greater degree even than now, congressmen got their ideas as to what a good navy required direct from the secretary rather than from naval officers. I asked many congressmen and others why they did not get their ideas from naval officers direct instead of getting them filtered through the mind of a secretary, who might transmit certain inaccuracies in the process of filtering. The answers were rather vague and amounted to saying, "The military must be subordinate to the civil authority." This did not seem a very logical reason, but it was evidently potent.

Walker, like most great men, was unassuming in his manner and appearance and had a keen sense of humor. One day a young officer came into the Bureau of Navi-

gation, and, seeing Walker, whom he did not recognize, said to him, "Where 's Walker?" To this, the unexpected answer came:

"Oh, don't call me Walker; call me John."

The officer was overwhelmed with confusion, and apologized as best he could; but Walker laughed it off, and gave the young man the orders he requested.

The second advisory board had recommended the construction of certain vessels, and these recommendations being approved by the secretary and the President, the Congress of 1883 had authorized the construction of vessels virtually in accordance with those recommendations. The vessels authorized were one of about 4500 tons' displacement, two of 3000 tons each, and one of 1500. These were called afterward the *Chicago*, *Atlanta*, *Boston*, and *Dolphin*. As the *Dolphin* was only a gunboat, with only one gun as large as six-inches caliber, the principal work in the Bureau of Ordnance, when I joined it, was in designing the ordnance for the *Chicago*, *Atlanta*, and *Boston*, especially the *Atlanta* and *Boston*, which were to be completed before the *Chicago*.

My work in the bureau was to be the adaptation of electricity to ordnance and gunnery. Couden looked out for torpedoes and guns, Buckingham for gun-mounts, and Alger for mathematics, especially as applied to gun designs. But we all worked together, and we had to work together; in fact, we had to flounder about a good deal together. None of us knew very much about any of the subjects of which we were in charge except from reading. An idea of our fitness for the work may be gathered from the fact that, after all the designs had been made for the ordnance outfit of the *Atlanta* and *Boston*, we discovered that, if the ship heeled over as much as ten degrees, the gun could not be turned around. The design called for hand power only, and the center of gravity of the gun and the gun-carriage, as designed, was so far away from the pivot in the deck that no two men, using the training-gear designed, could possibly move the gun-carriage up-

hill if the ship rolled ten degrees. To make the matter worse, nearly all of the money appropriated had already been allotted, so that there was very little money left with which to make any changes. It was found practicable to change the design in such a way as to move the center of gravity much nearer to the pivot, but it could not be moved far enough to overcome the difficulty. We had faced the situation blankly for several days when I was able to offer a solution that met the difficulty. By this solution the design and the gearing remained as they were, but a shaft was run down from the gearing on the gun-carriage to a room below, in which we could put an engine that could be operated by the gun captain from above.

After my solution had been accepted, the next question that came up was the kind of engine which should be put in the room below. The preference of Commodore Sicaud was for a water-engine, which was the kind of engine that the British were using for turning guns; my preference was for an electric engine; and the preference of the other officers was for a pneumatic engine. As a result of our discussions, I was sent to New York to investigate the matter, and was cautioned to find as cheap an engine as practicable, because the bureau had only a few hundred dollars left to devote to this purpose. After going to the various pump manufacturers, air-drill manufacturers, electric companies, and steam-engine-makers, I was forced to decide in favor of an ordinary steam-engine.

On my return to the bureau, my decision was accepted, and a contract was made with a firm on Dey Street, to supply two engines for the *Atlanta* and two for the *Boston* to fulfil certain specifications. The drawing of the specifications was done mostly by me, but none of us knew much about steam-engines. To illustrate this, it is merely necessary to say that in the specifications, as finally agreed to, the four engines were to be tested on a continuous run of twenty-four hours, but nothing was

said about what load the engines should carry! Finally, when the engines were reported ready, I went to the town of Reading, Pennsylvania, and solemnly stood by those engines for twenty-four hours while they turned round without any load whatever. Fortunately for the bureau, this story never leaked out; and I did not realize what a silly test it was for some time afterward.

At the proper time the four engines were put into the two ships. The one tried first was the one that turned the eight-inch gun on the quarter-deck of the *Atlanta*. On the first test it turned the gun perfectly; but the gearing made a high and hideous rattle that drowned all other sounds on board the ship, and could be heard over the navy-yard and out in Brooklyn. This difficulty was remedied without very much difficulty, however, and the four engines turned the four eight-inch guns of the *Atlanta* and *Boston* successfully for several years thereafter.

I found the work of adapting electricity to ordnance more difficult than I had expected, mainly by reason of the lack of confidence in electricity by officers, but largely also by reason of the imperfect nature of the insulation then used on wires and the general fragility of electrical apparatus. Shortly after I joined the bureau, Lieutenant-Commander Royal B. Bradford was assigned to duty in the Bureau of Navigation as "naval inspector of electric lighting." He had just returned from a cruise as executive officer of the U. S. S. *Trenton*, the first man-of-war in the world to be equipped with an electric lighting plant. Bradford was so impressed with the advantages of electric lighting for navy ships, and he had made such a success of the electric lighting of the *Trenton*, that the progressive Commodore Walker took up the matter with energy and force.

Bradford was an admirable man for the task, and went ahead with his work with so much energy and ability that before many years all except our older ships were equipped for electric lighting. To Bradford more than to anybody else does the navy owe the excellence of the

electric lighting installations in our ships. It may be remarked here that the whole country also owes much to Bradford, because the standard of excellence which he set brought out a safer and more durable grade of electric apparatus than could otherwise have been brought out; and "navy standard" became the standard that was set for electric work all over the United States.

My first attempt was to adapt electricity to firing guns, continuing the work of others in this field. Two objections were urged against it: one, that electricity was too uncertain, and the other that, although a man could fire a gun more quickly by pressing an electric button than by pulling a lanyard, this was of no real advantage, for the reason that the conditions of firing guns on ship-board were such that the man could not tell exactly when the sights were "on the target." I did my best to overcome these objections, but without success; so that the *Atlanta*, *Boston*, and *Chicago* were not equipped for electric firing. Of course all ships are now so equipped, and have been for many years.

One day in looking over the ordnance plans of the *Atlanta*, and seeing no range-finder provided, I said to Lieutenant Buckingham:

"Why don't you put a range-finder in the conning-tower?"

To this he made the surprising answer:

"If you will tell us where we can get a range-finder, we'll put it in."

Further conversation with him developed the fact that although many men had tried to invent range-finders for ships, no one had ever yet succeeded. This conversation was a fateful one for me, because I immediately resolved to invent a range-finder.

Shortly after I joined the bureau, the success of my book led me to think that it would be well for me to resign and go into electrical work, for which it seemed I had some aptitude. So, after my work in the bureau during the day, I would spend the most of the time in studying

electricity, especially the mathematical laws which governed it. Perhaps this was a foolish thing to do, but I enjoyed the studies intensely, and felt that keen and peculiar mental stimulation which work in the physical sciences produces.

In Prescott's book on the "Electric Telegraph" was a picture of Edison using a "megaphone," which was an apparatus comprising one long trumpet for speaking through, and two large cone-shaped receivers, fitted with rubber tubes, that could be inserted in the ears. With the approval of Commodore Sicard, I made a series of experiments with megaphones at the navy-yard in Washington. We thought that very large megaphones could be made that would not only help us to hear, but also to speak over long distances. Curiously, the principal value of hearing was to be the detection of coming torpedo-boats. I remember I made one megaphone that stood about ten feet high, and had a mouth about three feet across, and that a man wishing to use it would put his ear or his mouth at the bottom, for hearing in one case, for speaking in the other. The results were certainly interesting, and for a while they seemed important. No practical result of value was obtained, however, the principal reason being that the loudness of all sounds was amplified, including the sounds one did not wish to hear, such as those produced by the wind. A very effective apparatus, however, along the lines of Edison's, was mounted soon afterward, on my recommendation, on top of the pilot-house of the *Atlanta*. The megaphone idea has been adopted, of course, but in a much simplified form.

In March, 1885, Mr. Cleveland became President, and Mr. Whitney, secretary of the navy. Mr. Cleveland was elected with the assistance of the so-called "mugwumps," who were Republicans who revolted against Blaine. These mugwumps had the support of the principal daily newspapers of New York and of *Harper's Weekly*,

which was the principal weekly. As Mr. Whitney was a New York man with a wealthy wife and influential connections, he entered the Navy Department under excellent auspices. Shortly after he entered, I happened to be in his office when Rear-Admiral Simpson presented the report of the board which had just conducted the tests of the *Dolphin*—tests which the board reported to be successful. I did not hear the conversation between the secretary and Admiral Simpson, but I noticed that when Admiral Simpson went out, he appeared to be very much astonished and crestfallen. It turned out later that the secretary had expressed doubts as to the correctness of the report of the board, and announced his intention of investigating the matter.

Mr. Whitney appointed another board (some described it as “picked” and others as “packed”), and that board reported the *Dolphin* as “structurally weak.” As the contractor, John Roach, was the same man who was then building the *Atlanta*, *Boston*, and *Chicago*, this report and the attitude of the secretary resulted in the bankruptcy of John Roach and a long delay in completing those three ships.

The navy was much disheartened by the action of the secretary, because in their opinion all the vessels were satisfactory; but they accepted the delay with that obedience to superior authority which is and always has been characteristic of our army and navy; in fact, of all armies and navies.

Of course we now know that the action was most regrettable and that the *Dolphin* was an excellent ship. She made a cruise of 58,000 miles not long afterward, and she has been in commission most of the time ever since. The navy as a whole sided with John Roach, without whose organization, which he himself had built up, the ships could not have been built so quickly; but the navy, of course, was powerless. The newspapers sided with the secretary, and most of them lauded him. The

reputation which he got then he never lost, and one sometimes sees the extraordinary statement in the papers that Mr. Whitney was "the father of the new navy"!

Nobody was the father of the new navy. The new navy was the child of a public opinion created by navy officers. Excepting navy officers, the man who probably did more for the navy than any other one man was Secretary Hunt, who, though he was in office a very short time, brought about the establishment of the first naval advisory board for the express purpose of producing a new navy. Mr. Chandler followed Mr. Hunt, and both did efficient work; but both were only instrumentalities for influencing Congress and the President to do what naval officers like Luce, Walker, Sicard, and others urged them to do. Mr. Whitney came into office after the *Chicago*, *Atlanta*, *Boston*, and *Dolphin* were almost finished, and one of the principal acts of his administration was to delay their completion for virtually a year.

Mr. Whitney did one good thing for the navy, and that was to establish the "general storekeeper system." When Mr. Whitney came into office, each bureau had in each ship and each navy-yard its own stock of materials. As some of the materials were the same for one bureau as for the others, it occurred to Mr. Whitney, as a man of business, that it would be better to have all the navy department supplies in each navy-yard and each ship under the charge of one officer, and to let the representatives of each bureau in each navy-yard and ship draw such supplies as he needed from time to time. Mr. Whitney met with some natural objections on the part of certain bureaus, but he was able to get the system firmly established before he left. With modifications, it has continued ever since.

Some time in the spring of 1885 two gentlemen called on me in the Bureau of Ordnance, and introduced themselves as Professor Houston and Mr. Waugh of Philadelphia, representing the Franklin Institute. These gentlemen said that the Franklin Institute was arranging to

produce an International Electrical Exposition in Philadelphia in the summer, that a great deal of money had already been pledged, that a number of the greatest electricians in the world had promised to be present to constitute an electrical conference, and that they had come to Washington to seek the coöperation of the Government, especially of the navy. Of course I saw the importance of the proposition at once, and I told them that the Bureau of Ordnance had more electrical apparatus to show than did any other part of the Government, and that I should be glad to help all I could. So I introduced them to Commodore Sicard, with a strong recommendation that the bureau should coöperate by making an exhibit in the exposition. The commodore agreed at once, and said that he would give me charge of the exhibit.

The exposition opened about the first of September, and the Bureau of Ordnance had one of the best exhibits shown. The Franklin Institute erected a large building at Thirty-third and Market streets, and virtually all the electrical companies in the United States had exhibits there. The stage at which the electrical industry had already arrived was amazing. I think the Edison Company exhibit was the largest, but the exhibit of the Bureau of Ordnance attracted the most attention, at least at first. In that exhibit there were three search-lights, and one of them was of thirty-six inches in diameter, one of the largest lights existing in the world. This was hoisted up into a tower from which the light could be thrown in every direction. Pretty soon the Pennsylvania Railroad made an official complaint that it was blinding their engineers, so that they could not read the signals. Not long after, I received a letter from a town about twenty miles distant, saying that the beam of the light had suddenly illuminated the proceedings of a camp-meeting of colored people, and thrown them into the wildest excitement; they thought that the day of judgment had arrived.

Many naval and army officers came up the tower to watch the light, and we were all disappointed that we

could not see things clearly if they were more than a mile away. At first we did not understand why this could be, when we knew that, under favorable conditions, people twenty miles away could see the beam distinctly. But we soon realized that if any one sees an object, he sees it because of the light reflected from it or from the background; so that in order that we should see an object a mile away, the object would have to be illuminated so brightly as to reflect back rays of light over a distance of a mile with sufficient power to produce the phenomenon of vision.

The exposition continued during four months and supplied to vast crowds interesting and instructive entertainment of the utmost value. Sir William Thompson, Mr. Preece, and many other electricians of world-wide fame enlightened us with lectures, and many new inventions that had not yet become established were presented for the consideration of the conference of electricians, of which I was a very minor member.

One of the most interesting in this class was the Sprague Electric Motor, invented by Frank J. Sprague. Sprague was a graduate of the Naval Academy in the class four years after mine who by a remarkable system of tests, which he had proposed to the British Electrical Exposition in London, and which the exposition had adopted, had attracted the attention of electricians everywhere, among them Mr. Edison. Sprague soon afterward resigned, and went into the Edison Company, and later established the Sprague Electric Motor Company as a sort of annex to the Edison Company. One night after the exposition had closed, a dozen or twenty of us, including Sprague, were drinking beer at a saloon near by, in order to clear our minds for the next day's work. We got into an argument in which Sprague was on one side and the rest of us were on the other side. We all declared that, while Sprague had a very good electric motor, the theory on which he had built it was scientifically wrong. Later events proved that Sprague was sci-

entifically right and that all the rest of us were scientifically wrong.

One hot afternoon I received an unexpected call from Allderdice of my class, who had resigned and gone into engineering work. Allderdice seemed to be in a great hurry. He said in effect, "Now come along, Fiske, and run up to New York. We have got just time to catch the train. I am in with a company that has an electric locomotive head-light, and it won't work, and they want you to fix it up. The directors of the company are in New York, at the Fifth Avenue Hotel, and they sent me down here to bring you up for dinner."

I went with Allderdice, and on the way up he told me that he had told his friends that I was one of the best electricians in the United States and that he knew I could make their lamp work. He said to me:

"I want you to charge them a good round sum for doing it, because they won't think anything of you unless you do."

"How much do you think I ought to charge them?" I asked.

"At least five hundred dollars," he replied. I told him I could not do that, but Allderdice said I must.

We had a pleasant dinner and after dinner "talked business." Finally the head director said:

"Now, Lieutenant, in case you get this lamp working all right, how much will you charge us?"

I tried to say five hundred dollars but I could n't. I said two hundred, to the intense disgust of Allderdice.

About a month afterward the head director (I think his name was Wheeler) brought the lamp to Philadelphia, and we took it up to the tower where the big search-light was. As soon as I put the electric current through the lamp I saw that there was nothing whatever the matter with the lamp except that one of the springs needed to be tightened a little, which could be done by turning an adjusting-screw on the lamp. I told Mr. Wheeler this, and demonstrated the truth of my statement by simply

turning the adjusting-screw and showing that the lamp then burned perfectly. The whole operation did not take five minutes. Mr. Wheeler said, "Well, I'll be damned!" and put his hand into his trousers pocket and pulled out a roll of bills, which he handed to me. I protested; but he insisted that I had earned it, and so I took it. On counting the roll afterward, I found that it contained just two hundred dollars. I spent seventy-five dollars of it to buy a watch, and I have carried that watch from that day to this.

During the latter part of my stay in the Bureau of Ordnance I was asked by *The Popular Science Monthly* to write an article on the "Electric Railway." My article was one of the first articles that had appeared in a magazine of high standing on this subject, and it received a good deal of attention. It received attention, however, more as indicating possibilities than probabilities, and most people thought it went much further along the line of imagination than was compatible with good judgment. Of course the actual performance of the electric railway has been much greater than I predicted.

In October, 1885, I was ordered to the U. S. S. *Brooklyn*, then fitting for sea at the navy-yard in Brooklyn. Sicard wanted me to be held for the *Atlanta* on account of my experience with her ordnance equipment, and the fact that her ordnance equipment was of so novel a kind that the other officers of the ship could not at first know much about it. But the *Atlanta* was so long delayed that it was considered best to send me to sea, as I had been on shore three years, and to transfer me later to the *Atlanta*.

The *Brooklyn* went into commission, and shortly afterward we went to Newport, Rhode Island, to make certain experiments in regard to what is called the "tactical diameter." Our orders were to ascertain the best method of determining this. The tactical diameter is, generally speaking, the diameter of the approximate circle in which a ship turns round. It was very cold work. In carrying on our experiments, the *Brooklyn* would go into the large

sheet of water north of Gould Island, while various observers on shore and in boats would "plot the track" she was making in the water. My station was at the northern end of Gould Island. I had with me about half a dozen men. The northern end of the island ended in a bluff, which ran down precipitately into the bay. I planted my theodolite close to the edge of this precipice, and spent most of my time looking through its little telescope at the ship. We carried on these observations for many days, and finally our last observation was about to be made. A sailor stood beside me with a red flag, and I told him to make a certain signal to the ship with it. Then I put my eye to the telescope, with my back towards Gould Island. Suddenly I heard a curious *thump, thump* close behind me. Turning around quickly, I saw a bull hardly three feet away, with his fore feet planted on the ground in an effort to save himself from going over the bluff, which he seemed to have just discerned. Then the bull galloped away, his strong fore legs having saved one bull and one man from an uncomfortable cold plunge together.

We were glad to leave after Christmas, and go to New York. The work that we had been doing was very monotonous, and as the winter was unusually cold, it was very disagreeable. I remember being impressed with the hardships of the lives of the men in the coasting schooners during the winter-times. The schooners which would come into Narragansett Bay were covered with ice from the heads of the masts, over the sails and rigging, down to the decks, and over the sides. Cold weather is sometimes trying on shore, but it is much more so at sea, where the wind usually blows with greater force, and cold water is dashed over the face and hands.

On the first of January, 1886, I was detached from the *Brooklyn*, an old ship like the *Pensacola*, with sails and old-fashioned guns and engines, and ordered to John Roach's shipyard at the foot of East Ninth Street, New York, to supervise the installation of the ordnance equipment of the *Atlanta*. Naturally I made the acquaintance

of John Roach, and I found him to be a very interesting old man, though broken in health since the episode of the *Dolphin*. Whenever he saw me passing, he would beckon to me, and talk about navy matters and ship construction; but before he got through, he was sure to talk about the *Dolphin* and burst into tears. He had been a molder, and had risen to his almost great position by his own exertions, directed by his abilities and pushed forward by his character. With me he would talk as grammatically and correctly as anybody would, but I noticed with interest that whenever he talked with any of his workmen, he would talk as they did. For instance, he would say, "them rivets." One day as we were walking through his yard together, he said:

"Mr. Fiske, do you see that man walking ahead of us?"

"Yes, sir."

"Do you know who he is?"

"Yes, sir; that's Mr. Sickles."

"Do you know anything about him?"

"Oh, yes, sir, he invented the Sickles cut-off. Besides that, he is the first inventor of the steam steering engine. He is a very remarkable man."

"Yes," said John Roach, "he is a very remarkable man. The most remarkable thing about him is that he was never known to do a thing right the first time. I know, because I have had to pay for his experiments."

Some time in July, 1886, the *Atlanta* was towed from John Roach's yard up the East River to the dock at the navy-yard, Brooklyn. Shortly after, she was put into commission. The work of making her equipments, especially the ordnance equipments, had gone along so slowly that she was not at all ready; but as the officers and men were all ready, it was considered best to put the ship into commission and have the officers and men live and work on board.

The *Atlanta* was the first ship of the new navy, for although the *Dolphin* preceded the *Atlanta*, the *Dolphin* was called a "despatch-vessel" and was so rather than

a man-of-war. The *Atlanta* had a displacement of only 3000 tons, some sail power, and only one propeller or screw. Since then we have had ships of gradually increasing size, battle-ships, battle-cruisers, submarines, etc.; but each one of the ships that has followed the *Atlanta* has been a change only in degree from ships before her, and not a change in type, at least not so sudden a change in type as was the *Atlanta*. The *Atlanta* was the first United States ship to have modern ordnance, search-lights, and protective deck, and to conform in general to the changes in naval construction and ordnance that had come about in the foreign navies during the preceding twenty years. We were all very proud, officers and enlisted men alike, of being ordered to the *Atlanta*.

CHAPTER VIII

CRUISING IN THE *ATLANTA*

WE found a great deal of difficulty in installing the ordnance equipment in the *Atlanta*, principally because there were then no men experienced in this kind of work, and because some of the ordnance material supplied was not good in all ways. Finally we got all the gun-carriages and guns into place, however, and then we went out to sea to try them. The guns worked perfectly well, and so did the carriages; but we had some difficulty at first in keeping the men close enough to the guns, as many of them were found to be "gun-shy."

At one time, during a pause in the firing, the chief boatswain's mate, a handsome man named Davis, who was standing on the upper deck, saw a rope hanging down from the end of one of the boat-davits. To a seaman's eye this was painful; but Davis did not like to go out to get hold of the rope and pull it in, because he was afraid that a gun near the davit, the muzzle of which he could see sticking out from the deck below, might be fired; still less did he like to order another man to do it. After hesitating for a few minutes, the seaman's instinct prevailed over prudence, and he ventured outside of the ship and took hold of the rope. Just as he did so the gun was fired. The shock to Davis was tremendous; but we got him in on deck, and he soon recovered. But his clothes did not recover. The day was cold, and he had on a navy overcoat. Now, an explosion causes a rapid alternation of increased and decreased pressure of the air. Of course air was inside of Davis' clothes as well as outside; and the result of the unbalanced pressure was to tear his clothes literally to shreds. I have never seen

anything like it before or since. If some one had taken a pair of large shears and cut all his clothes from top to bottom into strips about an inch wide, the result, to all appearance, would have been the same.

Later, that afternoon, I was standing on the port side of the gun-deck aft, when the six-inch gun near me was fired. I was not far from the muzzle; and the gun seemed to shoot right through my left ear. I executed an imitation of the Highland Fling for a few seconds; but the intense pain passed away soon, and in a few minutes I found I had suffered no apparent harm. But my hearing has never been quite so good since in that ear.

The fastenings on the deck by which the gun-carriages were secured there were made of bronze. The firing demonstrated the fact that bronze was not strong enough. So we went back to the navy-yard and stayed there for a considerable time, while steel tracks and fittings were being made with which to replace the bronze ones. The steel parts were then put in, and after that we had no further difficulty with our ordnance equipment. But we had a great deal of trouble in getting the horse-power required by the contract from our main engines. This was finally accomplished, however, and the *Atlanta* was pronounced a great success.

About this time my promotion to the grade of lieutenant became due, and I was ordered to examination for promotion. I had no difficulty in passing the moral, mental, and professional parts, but the doctors shook their heads when they listened to my heart. Like the doctors on my preceding examination, they said I had organic heart disease, but that the disease had not progressed far enough to warrant their rejecting me. This was some comfort to me; but it was the kind of comfort that is sometimes called cold.

While in the *Atlanta* I did a good deal of experimenting in electricity. I became much interested in what we now call "wireless telegraphy," or "radio telegraphy," but which we then called "signaling by induction." Our

captain was Francis M. Bunce, one of the finest men I have ever known, and he helped me as much as he could in getting the Navy Department to let me have a little money now and then with which to get the electrical apparatus made. Bunce had made a splendid record during the Civil War, but occasional lapses from the path of strict sobriety had prevented him from getting the promotion that otherwise would have been given him.

Later he became commander-in-chief of the North Atlantic Fleet, and the navy was delighted at this, because it was at a time (about 1896) when war with Spain seemed probable, and we felt that Bunce was the best man we had to command in war. We deplored his occasional lapses, but we were of the opinion that, even if their unfavorable effect had been greater than it was, Bunce would still have enough left in his favor to make him a better commander-in-chief than any other man we had. Unfortunately, when war finally did break out with Spain in 1898, the secretary of the navy, while a most excellent and admirable gentleman, was a man with such ideas regarding total abstinence that he could not see all the characteristics of men in their correct shapes and sizes. To him occasional insobriety was not so much a fault in a man as the one great fault. According to his estimate, a tendency of this kind overbalanced whatever great qualities a man might have, and made that man a liability to the human race and not an asset. Captain Sampson was made commander-in-chief, with the rank of rear-admiral, and put over the head of Schley, who had been his senior during all their professional lives. The result was the notorious "Sampson-Schley Controversy" which did the navy so great a harm as to be incalculable. Of course Sampson was one of the best officers the navy ever produced; but he did not have the qualities of leadership that Bunce had and, besides, his health was delicate. True, he won the Battle of Santiago, and should be accorded all due credit for it. But Bunce would have won the battle just as gloriously, and would have aroused the

enthusiasm of the people instead of chilling it; with the result that the establishment of the navy upon an adequate basis would have been made much easier than it really was after the disastrous Sampson-Schley Controversy.

But to return to the *Atlanta* and the year 1887. At this time there were several men experimenting in signaling by induction, notably Edison, Nikola Tesla, Professor Dolbear of Tufts College, and some others, among whom was my humble self. In one of my experiments I wrapped several coils of wire around the *Atlanta*, and sent a current through the coils, which I could make and break; and I also wrapped the steel tug *Nina* with coils of fine wire with a telephone in the circuit. The main current on board the *Atlanta* being made and broken, I could hear the "makes and breaks" in my telephone in the *Nina*, but not over sufficient distances to be of any practical value. Sylvanus Thompson's book on "Electrical Engineering" mentioned me as having made the largest electro magnet in the world—a 3000 ton electro magnet, the *Atlanta*. I had considerable correspondence with Prof. Dolbear and I carried out as best I could the recommendations he made to me in regard to the scientific proportions of my apparatus. President Henry Morton of Stevens Institute also became interested even to the extent of letting me cut all the lightning-rods on the institute in two. I think they remained so for three days, when finally I had the broken parts soldered together again. I did not get clear indications for much more than fifty feet.

Then I tried to signal through the water. I immersed two large plates of copper in the water; one plate a considerable distance ahead of the *Atlanta*, and the other a considerable distance astern. Then, on the opposite side of the stream, on the cobdock side, I immersed two similar plates, connected by fine wire in circuit with a telephone. The distance across was about two hundred yards, and I could hear perfectly well whenever the cur-

rent was made and broken on board the *Atlanta*, a large enough quantity of the "divided circuit" coming across and going through my wire and telephone.

Ensign Dana Greene helped me in these experiments. He was a son of the Lieutenant Greene who took command of the *Monitor* after Worden was disabled in the fight with the *Merrimac*, and he was also a nephew of the present General Francis Vinton Greene. He had graduated at the head of his class at the Naval Academy, and was a wholly admirable young man. Shortly after this I was able to get Greene, who wished to resign, a position with the Sprague Electric Company, from which he finally went to the General Electric Company at Schenectady. He married a daughter of Commodore Chandler of our navy. One afternoon in 1900, when he and his wife were skating on the Hudson, they fell into a hole in the ice and drowned together. At this time I was coming across the Pacific with a present for Mrs. Greene, which her sister had handed to me in Yokohama.

One afternoon I thought I had made a great discovery. Greene and I made a trip along the East River in the steel tug *Nina*, towing a copper plate by an insulated wire, in the circuit of which was a telephone; while on board the *Atlanta* a current of electricity was kept going through the wire to the plates immersed ahead and astern of the ship, and through the water between them. I knew from Preece's experiments in England, in which he signaled through the water from England to the Isle of Wight, that a current spread out a good deal in going from one plate to another in the water; and I hoped to pick up some of it on board the tug. On the afternoon in question I told the electrician on board the *Atlanta* not to break the current, but to keep it going continuously, and that I would make and break the current in the wire on board the tug. So Greene and I stood in the cabin of the tug, he listening at the telephone and I working a telegraph key in front of him. I shall never forget the blissful smile on Greene's handsome face as we were

steaming away from the *Atlanta*, getting at greater and greater distances, while he kept saying, "Yes, I hear a click every time you press the key." Finally I said, "You don't hear it as strong now as you did at first, do you?" "Yes, sir; I think I do." At last, after we had steamed about two miles away, and his indications were as strong as ever, I became confident that a horrible suspicion which had been rising in my mind was well founded; and so I said: "Greene, we're a pair of d.f's. If that current came from the *Atlanta*, it would be getting weaker and weaker. What we hear is some current in our own wire. I believe that the sea-water out here and those two plates in the water constitute an electric battery strong enough to send a current through our wire and actuate the telephone." Subsequent investigation showed that this was true.

The *Atlanta* made a cruise of four months to the West Indies and back. One bright, hot afternoon in St. Thomas some of us went into the telegraph office in the town of Charlotte Amalia to see if there was any news, and we were shown a cable from New York, saying that there was a tremendous blizzard there, that the snow was so deep that all traffic was suspended and that people were dying in the streets. We did not believe this at all, but we afterward found that the account was true. The date was March 12, 1888.

We went to Colon, which was still called Aspinwall. We found it considerably changed from the Aspinwall of 1876, because thousands of French and Chinese were working on the Panama Canal. A feverish and unhealthy activity pervaded the hot little town. Gambling-saloons and drinking-saloons lined both sides of the principal streets; people of all nationalities hurried hither and thither, and the conditions of health were such that one was reminded of the sentence in the Bible, "Pestilence walketh in the noonday." Chagres fever, malaria, and yellow fever were the principal diseases; but delirium tremens and the results of gambling and over-

drinking were present in addition. I remember a general picture at once exciting, brilliant, attractive, and forbidding. Only one moving-picture stands out clearly in my mind, and that is of a young negro woman being driven rapidly through the streets in a wagon under the charge of two policemen. She was raving and yelling at the top of her voice, and trying to tear off her clothes. They told me that that was what the women always tried to do there when they were drunk. Some of us agreed in conversation that Aspinwall came the nearest to our ideas of hell of any place we had ever seen.

We went from Aspinwall to New Orleans, and found the change delightful. We were in company with another ship,—I think the *Ossipee*,—and the night before we entered the passes, we used our megaphone with excellent effect to give an order orally to the *Ossipee* to rectify a mistake she had made in reading a signal.

One afternoon we gave a dance on board the *Atlanta*, and I met a pretty young lady with whom I had several dances. She asked to see my room. On my bureau was a picture of my wife and six pictures of my little daughter at various ages. She said:

“Is that your wife?”

“Yes,” I replied.

“Are all those your children?” she asked.

“Yes,” I said.

“I might stand the wife, but I can’t stand all those children,” she then said.

We had joined the squadron of Admiral Luce, and the ships were anchored one behind another in the swift current of the Mississippi. One afternoon, a tremendous storm of wind, rain, and thunder came up just as a tow of tugs and barges reached a spot a short distance ahead of the *Atlanta*. Exactly what happened to the tow I do not know; but I know that two large barges drifted down with tremendous force on the *Atlanta* and carried her astern helplessly, just missing the *Ossipee* astern of us by a small margin. We let go an additional anchor with-

out avail at first, but we finally brought up near the navy-yard in shoaler water.

From New Orleans we went north, and finally to the navy-yard in Brooklyn. Some time before joining the *Atlanta* I had invented a mechanical lead-pencil the characteristics of which I do not now recall. I assigned the patent to the American Lead Pencil Company, and they put the pencil on the market. One forenoon, while I was officer of the deck of the *Atlanta*, alongside of the dock at the navy-yard in Brooklyn, a gentleman came on board, and introduced himself to me as a representative of the American Lead Pencil Company. He said that my lead-pencil was not selling very well, but that he was authorized by the company to offer me two hundred dollars for the patent! Two hundred dollars! There was not anything in the world I wanted so much just then as two hundred dollars—except a larger sum. So I said:

“When will you give me the two hundred dollars?”

He said:

“I’ll give it to you right now, if you wish: I have a check-book in my pocket, and the papers all ready for you to sign.” I hurried him into the chart-house, fearing that he would get away; and we put the whole operation through in about two minutes. I think the lead-pencil sold better after that.

During the ten years that had elapsed since my conception of telegraphing printed words I had been thinking a good deal about the subject. One afternoon in New York, while the *Atlanta* was at the navy-yard, I stood watching analytically the operations of a stock-ticker, when an idea came to me by which I thought I could improve stock-tickers tremendously. I set about the task at once, and in a few days I called at the offices of the Western Union Telegraph Company with a sheet of paper on which there were some diagrams. I was ushered into the office of the vice-president and general manager, Thomas C. Eckert, who afterwards became the

president. I showed him the diagrams, and he said to me politely:

"I see your idea, and it looks to me like an extremely good one. I wonder that no one has thought of it before. But, you know, I cannot really do anything with it. If the Western Union Company were to adopt this scheme of yours, we should have to throw away all our stock-tickers, and lose over a million dollars. But if you take this to some other company, they might put it on the market and give us no end of trouble. That is n't likely; but at the same time, I am willing to buy it from you for some small sum. How much do you want?"

I was expecting something like this, and so I said,

"I 'd like ten thousand dollars."

"Of course you would," said General Eckert, "but I 'm not going to give you ten thousand dollars. I 'll tell you what I 'll do; I 'll give you seven hundred dollars for it as soon as we get the patent. We will pay the expenses of the patent, so you will be seven hundred dollars to the good."

I agreed at once, and we signed the papers. There was little trouble in getting the patent, and I received the seven hundred dollars about a year later.

On my way back to the ship, I conceived another idea which seemed to be very much better; and just a week later, I presented myself before General Eckert again with another diagram. General Eckert said:

"Are you going to come over here once a week to get seven hundred dollars?"

"No, sir," I said; "but I 'd like seven hundred dollars this time."

He took a pad of paper in his hand and wrote on it slowly with a lead-pencil, "I will give you \$100," and showed it to me.

"When will you give me the hundred dollars?" I asked.

"Right now," he replied.

"Before the patent is granted?" I asked.

"Yes, before you leave this room," he answered.

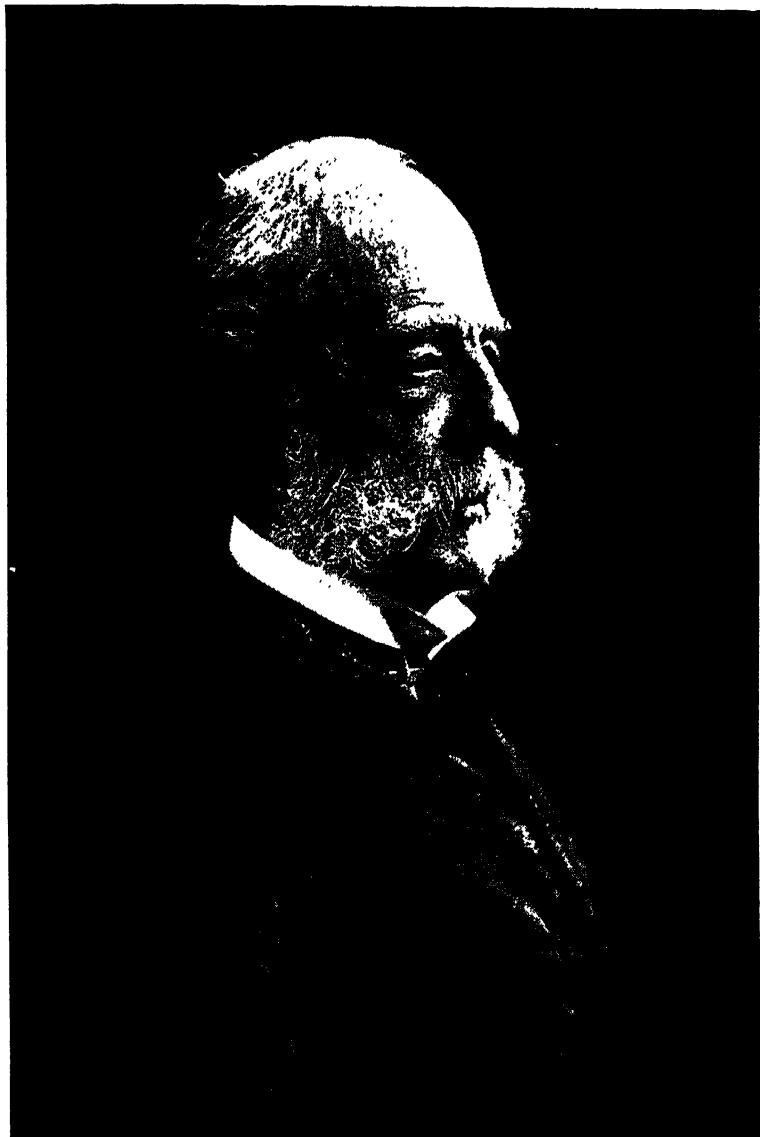


Photo. Alman & Co.

H. R. Luce

I agreed to this, and we signed the necessary papers.

The man who brought in the papers to sign was Mr. C. L. Buckingham, the patent attorney of the company. About a year later I got a note from Buckingham, saying that he was having a little trouble in getting my second application papers through, and that he would like me to take lunch with him at Delmonico's and talk over the matter. We had an excellent luncheon, during which Buckingham said that what he wanted me to do was to testify under oath as to certain facts connected with my conception of the idea. He added:

"Of course you testify as an expert, and we will pay you at the usual rates."

"What would the usual rate be in a case like this?" I asked.

"About two hundred dollars," he replied.

"Do you mean that you will give me two hundred dollars if I will testify in this matter?" I asked.

Buckingham said: "Yes, that is the usual procedure."

So I went to Buckingham's office after lunch, took the usual oath, and then stated the facts connected with my conception of the idea. Then Buckingham handed me a check for the two hundred dollars.

About a year later this procedure was repeated almost precisely.

Two or three years after that, when I was in the *Yorktown*, we anchored at Sandy Point in the Strait of Magellan, and the mail came on board with a letter for me from Buckingham. Buckingham's letter asked me to sign some papers, which he inclosed, if I could do so with propriety, and to send him the bill. I was not able to do this until we got to San Francisco several months later, because a notary public was required. Then I signed the papers, and sent in a bill for two hundred dollars. A check for that amount came back by return mail.

About two years later I met Buckingham by chance on Broadway. He told me he had been able to secure a

strong basic patent on my second printing telegraph, and that he had tried to get the Western Union Telegraph Company to adopt my telegraph to the exclusion of all others, but without success. He said that, although my system had the disadvantage of needing three wires instead of two, it was very much more rapid and less apt to make mistakes; because the type wheel jumped instantly from one letter to another instead of going slowly by pulsations. Buckingham added that he had left the company, was devoting all his time and money to my invention, and that he had a line in operation between New York and Chicago which was working very well, though still experimentally.

About a year after that I met Buckingham again by chance. He said that he had been operating my printing telegraph between Paris and Berlin, but that the established telegraph companies in the United States and Europe had been too strong for him, and that he had finally been compelled to give up. I said: "Mr. Buckingham, I'm dreadfully sorry; you must have lost a good deal of money on my account." Buckingham answered: "It has cost me about three hundred thousand dollars. Of course I am sorry that I lost the money, but I am not sorry at all that I went into the scheme. I am only sorry I was not able to put it through."

That was the last time I ever saw Buckingham. He became a very successful practitioner of patent law in New York, and died about ten years later.

A great part of the next summer we spent in Narragansett Bay, off Newport, near the war college, which Admiral Luce had persuaded the Navy Department to establish, which was the first naval war college ever established by any nation, and of which he had persuaded Commander Mahan to undertake the presidency. Luce, with that foresight which to some people seems like prophecy, and to others seems like genius, had years before realized what nobody else realized in our navy, *or in any other navy*, that naval officers as they grew

older needed instruction in strategy, in addition to the instruction which their duties gave them in gunnery, navigation, ordnance, seamanship, international law, electricity, etc., and had conceived the idea of establishing a naval war college. Despite covert sneers and loud guffaws, Luce succeeded in getting a few officers to see the light that he saw, and to consent to identifying themselves with the project; and finally he even persuaded the department and Congress to establish a college, utilizing the old poor-house on Coaster's Harbor Island for the college building. In this very modest structure a few Luce devotees then read books and wrote papers and delivered lectures. At the head of these officers was Commander Alfred T. Mahan.

A depressed-looking man he was in those days. I shall never forget a conversation I had with him and Mrs. Mahan at the war college one afternoon. While Mahan did not say that he had made a mistake, it was perfectly apparent that he was intensely discouraged. He made excuses for himself and the war college, but seemed to have no great hope connected with it. That a man of his rank and standing should have made excuses for himself to an obscure young man of my age and rank showed how he regarded his position then.

Luce ordered the officers of the fleet to go to certain lectures delivered by Mahan and others. We obeyed, of course, but with very bad grace. We did not see, even the captains of ships, who ought to have seen, did not see, what the campaigns of the Archduke Charles had to do with the profession of the naval officer. Luce, Mahan, and the others at the war college tried to make us see that the art of war, like any other art, is an art that is practised by men, according to the principles of the art; and that in the military and naval art the guns and other weapons used are tools, just as a hammer and a chisel are tools in the hands of a sculptor or a brush in the hands of a painter. We, like most other people, were down so close to the ground that we saw only the things

immediately around us; while Luce and Mahan were far enough above the ground to see other things besides, and to see the relations of those other things to the things immediately around them. Nearly all the seed fell on stony ground; but the fact that the war college continued to maintain an existence, although a miserable one, for many years, until it finally became established, shows that occasionally a seed fell on fertile ground.

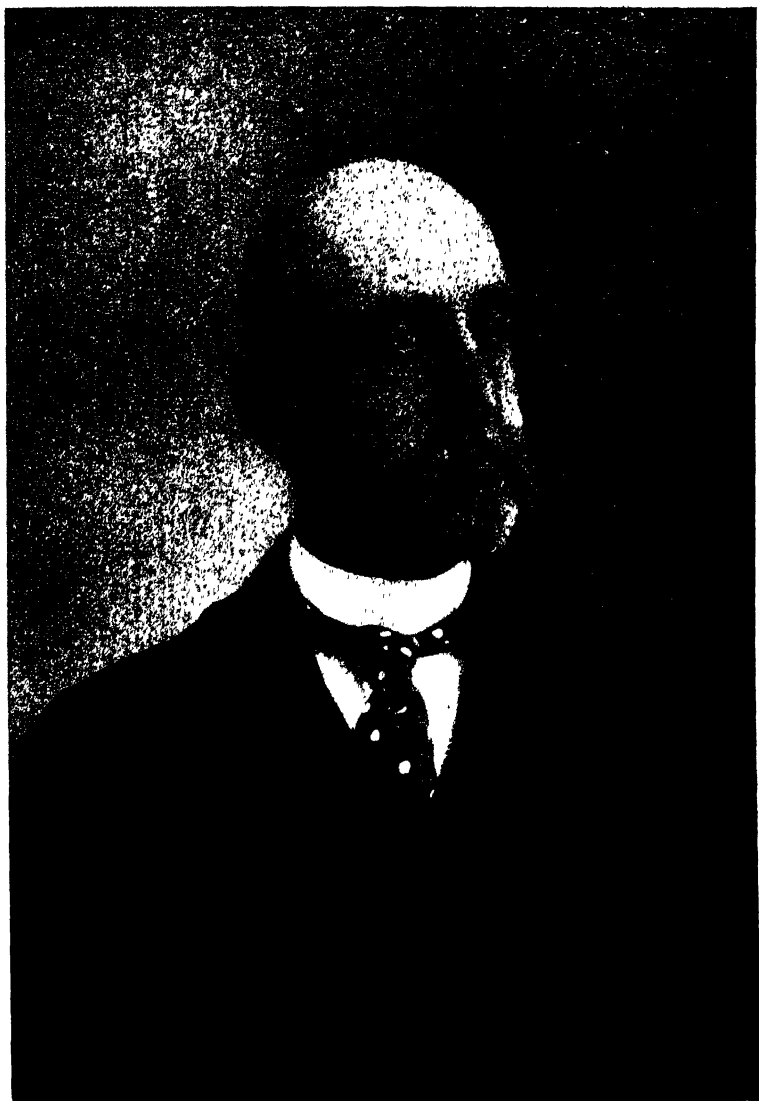
But Luce gave us other work than listening to lectures. He kept us going all the time; some one dubbed him the "great North American drill sergeant." He kept us continually steaming out to sea to hold tactical evolutions, then going into port to have night exercises, sham attacks, landing parties, marches, etc. Luce could never be quiet himself or let anybody else be quiet. We admired him intensely because we realized his extraordinary intelligence, his professional knowledge and skill, and his force of character. And he was a delightful companion, too, unassuming in his manner and full of funny stories and witty talk.

One day in Newport another lieutenant and I were walking slowly and gravely, and we encountered Luce walking much more briskly than we, wearing a pink flower in his buttonhole and swinging a little cane. As we passed him we saluted, of course, and we heard him singing to himself.

"Waters," I said, "what do you suppose keeps him in good spirits all the time."

"That's easy," answered Waters; "he doesn't smoke."

That winter Luce took the North Atlantic Fleet to Pensacola, and told us we had to go ashore for a week and pretend to be an army. All the boats of the ships were towed to the shore by steam launches, taking away from every ship all the officers and men except just enough to take care of them. About an hour before we were to start it began to rain in torrents. Some of us said, "Well, we don't like rain ordinarily, but this will



Photo, Brown Bros

REAR-ADMIRAL A. T. MAHAN

prevent our going ashore this afternoon." We didn't know our commander-in-chief. We went ashore at the time appointed, and spent all the afternoon and evening in the rain, getting up our tents and putting our camp in order. Most of the officers and men had to lie on the ground under their tents, but Midshipman Jenkins and I were able to get a few boards to lie upon. Jenkins was the first lieutenant of the company of which I was captain. We were all drenched to the skin, and everything we had was wet, and I expected to see a few hundred pneumonia and rheumatism cases in the morning. But there were no pneumonia or rheumatism cases in the morning. The fact that the ground was sandy and absorbed the water quickly, helped us, of course.

After we went north that spring (1888) Luce gave a lecture before the United States Naval Institute in which he pointed out the impossibility of ever getting an efficient navy with the system of naval administration then existing. Under that system the Navy Department was divided into separate bureaus, each with its special task to do; but there was no one to direct their activities strategically, in preparing for war or waging war, except the secretary of the navy, who was always a civilian and untrained in strategy.

This lecture marked Luce's downfall, materially speaking. Up to that moment Luce had been the only flag-officer since the Civil War who had been able to get a large fleet together and drill it in naval tactics or who seemed to care to do so. At this time he had designed a number of exercises for the coming summer, in which his fleet would operate in simulated war operations along the approaches to New York and Newport; but after his lecture his ships were taken away from him one by one. Not very long after he was detached from the command of the fleet.

While in St. Thomas one evening thinking about the problem of range-finding, and realizing that the problem was to find the sum of two angles included between two

observers and lines drawn from those two observers to a target, it occurred to me that the summation might be made by adding the resistances of two portions of wire in an electric circuit. This idea seemed so good that I attacked it at once, and was soon able to devise an apparatus on the principle of the "Wheatstone Bridge," which seemed to solve the problem perfectly. On getting to New York I showed it to Lieutenant Zalinski of the army, then working on the so-called Zalinski Pneumatic Dynamite Gun, saying I thought that it might help him solve his problem of adapting the *Vesuvius* to her work. Zalinski was delighted with my scheme, and I soon constructed a crude apparatus to test it. I set this apparatus up on the southern shore of Staten Island; and the Pneumatic Dynamite Gun Company had an expert test it by measurements of actual distances both day and night. The experiments were so successful that they asked me to construct an apparatus for the *Vesuvius* at their expense.

CHAPTER IX

THE *VESUVIUS*, MY RANGE-FINDER AND GUN-DIRECTOR

I WAS detached from the *Atlanta* on October 1, 1888, and ordered as member of a board that was established to conduct the "acceptance trials" of the *Vesuvius*, the so-called "dynamite cruiser."

I was glad to live on shore again, where I did not have to stand night watches; but one of the first things that happened was that all the members of my little family were taken ill. My baby daughter was taken ill with diphtheria, her nurse with spinal meningitis, my wife with nervous prostration, and I with rheumatism. We all recovered except the nurse.

The *Vesuvius* was a vessel especially constructed by the Cramp Company for the Pneumatic Dynamite Gun Company to carry three pneumatic guns. These guns were fifteen inches in diameter, and designed to fire projectiles that could carry five hundred pounds of dynamite each, or some other high explosive. The three guns were secured in the bow of the *Vesuvius*, pointing directly forward, at a fixed angle of elevation of eighteen degrees. The propelling force behind the projectile was compressed air instead of powder, and it was stored in reservoirs below deck, and admitted to one gun or another by opening a valve. The range, or distance, to which the projectile was to be thrown was regulated by the time which the valve was allowed to stay open. Extremely ingenious arrangements had been devised, some by Lieutenant Zalinski, but most of them by a Russian named Rapieff, to regulate the time to a thousandth of a second.

Rapieff was a highly educated and ingenious man and

the inventor of an electric light, somewhat used in Europe, and known by the name of the Rapiéff light. He was an excellent electrician; but I remember his participating in a discussion one afternoon with some important New York men, during which he said substantially: "The electricity is very good for the delicacy. It is beautiful for all the things in which great refinement is required, for the telegraph, the telephone, the electric light, the instrument of precision; but for the power, no. If you want the power, you must have steam or compressed air or water. The electricity is no good for the power."

The *Vesuvius* was a highly interesting craft. She was entirely different in her design and intentions from any other naval vessel. The guns of all naval ships had been directed at the side of an enemy ship, with the intention of piercing the side with a projectile; but the guns of the *Vesuvius* were to be directed at the deck of the enemy ship or at the water near her. For firing at the side of a ship, it was desirable, and is still desirable, for the guns to have a "flat trajectory"; that is, for the projectiles to go from the guns to the enemy ship by a line as straight as possible. But the *Vesuvius's* guns had a high trajectory, and were intended to fall down on the target. Zalinski, being an artillery officer, understood the principle that, for attacking a horizontal target, as mortar-fire does, it is correct for the projectile to have a high trajectory for the same reason that in the game of tennis, if a player wants his ball to fall in a certain spot, and has no other end in view, he knocks his ball gently up in the air. A good deal of criticism by naval officers, however, was directed at the high trajectory of the *Vesuvius's* guns, which they said was contrary to principles of gunnery. They did not realize that the target was a horizontal one, and not the vertical one to which they were accustomed.

There were three sizes of projectiles: one size was the full calibre projectile, which would carry five hundred

pounds of high explosive; one sub-caliber size would carry two hundred pounds; and another sub-caliber size would carry fifty pounds. The two sub-caliber sizes fitted into the guns just as the full-sized projectiles did; but they were made to fit by what may be called "filling pieces," which fell off as soon as a projectile left the muzzle. These sub-caliber projectiles would, of course, go farther than a heavy projectile, but do less damage on hitting. The intention was to fire so that there would be about an even chance of hitting the ship or of falling about fifty or one hundred feet short of it; and it was thought that it would be found more desirable to fall about fifty feet short of a ship than to hit the ship, the idea being that the projectile would continue its course under water, strike the target ship below the water-line, and act like a torpedo.

The *Vesuvius* was two hundred and fifty feet long and twenty-six and a half feet wide; she drew nine feet of water, and had a displacement of 725 tons. She was made of low steel, was to make a speed of twenty-two knots, and to cost the Government three hundred thousand dollars.

The first trial of the *Vesuvius* was for speed, and was held by a board consisting of Lieutenants Cowles, Schroeder, and Fiske. We held two trials that were unsuccessful, much to the bewilderment of the contractors. On the second of these trials, and as we were on our way back to Philadelphia, the members of the board, two representatives of the contracting firm, and Mr. Horace See, were discussing the matter. Some one said:

"Now, I don't pretend to be a very scientific man, but it does seem to me that we have not given the *Vesuvius* a fair show, because we have been testing her in water that is too shallow. We have been trying her in Delaware Bay, and I think we ought to take her out to sea next time, where the water is deeper. You see, the ship drags a great deal of water along with her,

and if the bottom of the ship is near the bottom of the bay, this water is dragged along the bottom of the bay, and causes a great deal of friction; whereas, if there was deep water there, this friction would not exist.”

Immediately we all realized that we had been acting like donkeys, because we all knew just what this man had said, but had not thought to apply our knowledge to the case in point.

So the next time we went out to sea, and held the trial along a course just outside the capes of Delaware Bay. The result was a complete success, a mean speed of 21.646 knots being attained, which was 1.6 knots in excess of the contract. This achievement was hailed with joy not only by the contractors and the believers in the *Vesuvius*, but by the people all over the United States, because it surpassed all records of speed made up to that time by vessels of that class. One sentence in *The New York Times* read, “It is almost incredible to conceive of 4200 horse-power being developed in a vessel of 800 tons.” The trial was held on January 11, 1889.

Preparations were now started for testing the accuracy of the gun. To eliminate all sources of accidental error, a gun was installed at Fort Lafayette, pointing south down New York Bay, and three horizontal targets were established. One target was a mile away, another a thousand yards, and the other five hundred yards. Buoys at these spots were supposed to represent the centers of rectangles one hundred and fifty feet long and fifty feet wide. By the terms of the contract the projectiles were to fall inside these rectangles. I was a junior member of the board, and my first task was to supervise the loading of the so-called dynamite-shells with nitro-gelatin. The gelatin masses, as packed in the shells, looked like cheeses.

After a few practice shots, the final test of the gun was held on January 26. Eight shots were fired, and five hit the target.

My station was on the shore abreast of the target, where I stood with a theodolite to measure the distance by which each projectile went over or short of the target. I can remember now the thrill I felt whenever I heard a loud cough from Fort Lafayette a mile away, then saw a tremendous fifteen-inch projectile coming directly at me, then saw it strike the water and run under water about fifty feet, and then explode and throw up a tremendous geyser of water hundreds of feet into the air. Zalinski had arranged a very ingenious electric fuse in the forward head of the shell, which was set into operation by the fact of entering the water, and which caused the automatic explosion of the shell, after the shell had gone about fifty feet under water; thus imparting a torpedo character to the shell.

The speed of the *Vesuvius* and the accuracy of the gun having been proved, the next step was to see if the guns could be fired as frequently as the contract provided for. By the contract each gun had to be capable of firing as often as once in a minute and a half. The work of getting the *Vesuvius* and her three guns ready for this test took nearly nine months, and the final official test did not take place until October 9. The board at that time consisted of Commander Goodrich, Lieutenant Schroeder, and Lieutenant Fiske, all of whom have now passed to the quiet shades of the retired list as rear-admirals. The trial was held off Pettys' Island, near Philadelphia, and was a complete success; the three guns firing five shells each, fifteen in all, in seventeen minutes. Each shell was a dummy, but of the size and weight of the shell that could carry two hundred pounds of explosives, and all went beyond the mile limit which was prescribed. The compressed air was in reservoirs, and charged to a pressure of two thousand pounds to a square inch. The nicety of the valve adjustment required may be gathered from the fact that, in order to make the longest throw, the valve had to open and close in one twenty-fifth of a second, while for the shortest

throw it had to open and close in one two-hundredths of a second.

While on the *Vesuvius* board it occurred to me that it might be possible to make an automatic machine-gun that would operate by compressed air instead of by powder, and that the power for actuating the mechanism could be secured by cutting a hole in the rear end of the barrel and using the force of the air that escaped. I found it easy to invent a mechanism for carrying my idea into effect, and then I saw that the plan might be used with other kinds of gases than air; gunpowder, for instance. So I made application for three patents, one patent covering the basic idea of using gas conducted from a hole in the rear end of the barrel, one covering the application of the scheme to pneumatic guns, and the other covering its application to powder guns. These applications were all granted finally by the Patent Office, and then I did one of the many foolish things that I have done in my life: I abandoned three perfectly good basic patents rather than pay the three "final fees," aggregating sixty dollars. Years afterward, the "Colt automatic gun" appeared, invented and patented by Browning, which was based on the exact scheme for which I had been granted the three abandoned patents, and now this has been developed and improved into the celebrated "Browning Gun."

The *Vesuvius* was accepted, but she never found favor with naval officers except with a small minority. She was put into commission under the command of Lieutenant Schroeder, but I think for only one cruise. She was used off Santiago in the Spanish War under the command of Lieutenant-Commander Pillsbury, but did not accomplish much in a practical way. I have always been of the opinion that, despite the defects of the *Vesuvius* and of the gun itself, the system had great possibilities, and that it is unfortunate that they were not developed. But the Pneumatic Dynamite Gun Company failed, and there was no man or body of men behind the

enterprise after that to contribute the necessary motive power to overcome the difficulties. Motive power is always needed to overcome difficulties.

During my cruise in the *Atlanta* I had invented an apparatus whereby the motions of an electric motor could be made to follow the motions of an operator's hand in both speed and direction. I got a patent on this, and I also got patents on three applications of it; one for hoisting ammunition, one for training guns, and one for steering ships. I assigned these patents to the Sprague Electric Motor Company, and sometime before I left the *Atlanta*, the Sprague Company began to manufacture an electric ammunition-hoist. The underlying idea of this was that the operator, by turning a small crank, would cause the electric motor to hoist the ammunition; and that if the operator stopped moving his hand for any reason, such as being wounded or suddenly startled, the motor would stop. This device attracted considerable attention, as it was the first attempt to apply electricity to ordnance used on board ship. The ammunition-hoist, when completed, was installed on board the *Atlanta*. It was successful, and remained in operation for about three years, when it was supplanted by an improved device.

One afternoon after I had left the *Atlanta* I went over to the navy-yard to see the ammunition-hoist work. The *Atlanta* was then at the cobdock. In going through the yard, I met an assistant engineer, whom I will call Price. He and I walked through the yard together, went on board the *Atlanta*, and descended into the wardroom, where we sat a few minutes at the table talking. He seemed to be in fairly good spirits, but he said he had been mortified by a letter from the department which intimated, he thought, that he had been trying to shirk his duty. I remembered afterward that he carried a small package in his hand which looked as if he had just made a purchase. I went forward on the gun-deck, and spent a few minutes watching the operation

of my ammunition-hoist, when I noticed evidences of some commotion on the gun-deck. I went aft, and saw that the sailors had hung a light kind of screen, and had made a small temporary room there. Looking behind the screen, I saw Price lying on the deck dead, his head covered with blood. He had gone to his room and shot himself almost immediately after leaving me at the wardroom-table. On his bureau were the cartridges, and in his hand was the revolver, which he had bought in Brooklyn, and which he was carrying in the package I had noticed in his hand while he and I were walking through the navy-yard in pleasant talk together.

Shortly after making my electric ammunition-hoist, the Sprague Company installed my electric training system in the U. S. S. *Chicago*, attaching it to the eight-inch gun-carriage on the starboard side of the quarter-deck. As this was the first attempt to train guns by electricity, it attracted a great deal of attention. It was a success almost from the start, but it was determined later not to use any artificial source of power except for larger guns. I took up that problem a few years afterward.

It is my impression that I was the first one to demonstrate the practicability of using electricity to hoist ammunition and train guns. The subject was taken up in all the navies afterward, and I think I am not wrong in saying that all the navies use electricity now for those purposes. I was never able, however, to adopt my system to the steering of ships. When the practical details were worked out, the complexity that resulted was found to be so great as to be prohibitory. I saw no way of avoiding it except by leaving out that feature which compelled the steering-engine to follow the motions of the wheel on deck as it was moved by the quartermaster. I often suggested that such a following was not necessary; that it was, in fact, a "relic of the Dark Ages." I never could get anybody to agree with me. During the last few years, however, officers have come to see the uselessness of this factor. In fact, an electric steer-

ing-gear, in which the quartermaster simply moves a little controller, like that which a motorman uses, has been introduced into the service.

My electric range-finder never worked well in the *Vesuvius*, and for many reasons, one being that it was the first apparatus of this kind ever made, and therefore faulty in details; the second reason being that the base line was only twenty-six feet long. But before this apparatus was completed, the American Range Finder Company was incorporated in New York to develop my inventions, and this company secured a contract from the Bureau of Ordnance to install one of my range-finders in the *Chicago*. The navy was in a very curious state of mind just then. All the officers were impressed with the idea that the navy had fallen into a deplorable state, and that everything possible must be done to get it out. Almost any suggestion was welcome, and nothing wrong was seen by anybody in my entering into business relations with the American Range Finder Company, which was to sell apparatus to the Government. My arrangement with the company was that they were to take out patents on my apparatus in foreign countries, and that I was to receive one fifth of the profits of the company. There never were any profits. All the patents we applied for were ultimately obtained except one, and that was for the first and only patent I ever applied for in Turkey. The answer to the first application was that the Turkish Government would not grant the patent. Shortly afterward the company received a letter, apparently from the grandmaster of artillery, saying that if the company would give him eight hundred dollars, the patent would be granted. The company paid no attention to the letter.

My range-finder was installed in the *Chicago* in the autumn of 1899. It was beautifully made, but I could not, for a long while, get it adjusted in the ship. The first essential was that the two telescopes, one in the bow and one in the stern, separated by about three hun-

dred feet, should be capable of being placed parallel to each other, in order that the amount of their convergence on a target might have some point to start from. I went to the *Chicago* night after night, with two assistants, and pointed the telescopes at the stars, and watched the positions of the telescopes at that instant. The telescopes then, of course, were parallel. In order to be sure that I had made no mistake, I would go to the ship the following night, and point the telescopes at the same stars, only to find that the marks I had made on the telescope supports the night before were all wrong. The time was approaching when the *Chicago* was to go to Newport, and I was almost desperate, because I seemed to be face to face with failure. I began to fear that something was wrong in principle with the instrument. Finally the ship went to Newport.

I followed her in a blind effort to find out what was the matter, but seeing no light whatever. The same procedure continued in Newport. One night when Lieutenant Knight was officer of the deck, he said to me:

"Jim, what are you trying to do? You come down here every night and look up at the sky with telescopes in an aimless way, and you come back the next night and do exactly the same thing."

I explained my difficulty to Knight and said:

"Now perhaps your experience at the gunnery station at Annapolis will enable you to see what the trouble is. I don't."

"Why, that is easy," said Knight. "The next time that you want me to get you out of trouble ask me to do something hard. The trouble is that those little platforms under your two telescopes are not parallel to each other; and besides that, the star is not always at the same height in the sky."

"Knight," I said, "if we can go to some part of the deck where it is dark, you can kick me until you get tired. I deserve it."

The officers of the *Chicago* had a great deal of good-

humored fun about my range-finder. None of them took it seriously, mainly because they thought there was no use for any range-finder. Furthermore, at this time, while the officers realized the necessity of more elaborate apparatus than they had had in the old navy, they were very much opposed, and very properly, to the introduction of any apparatus not absolutely essential. One day while in Newport I was defending the general proposition of range-finding, while several other officers were supporting the proposition that an officer could learn to estimate distances with his eye with sufficient accuracy for practical purposes. Finally Lieutenant Sears said:

“Jim, you have made a very scientific argument to prove that a man cannot estimate distances with sufficient correctness. Now I’ve had a good deal of experience in that line, and I believe I can. For instance, I believe I could go on deck right now and prove it. I don’t want to bet, because I may not be able to; but I think I can, nevertheless.”

So a lot of us went on deck, and I asked Sears the distances of several objects which we could see. Sears estimated these distances, and one of the officers wrote down what he said on a piece of paper. Then we went into the chart-house, and I measured on the chart the distances of those objects. To my amazement he had estimated them sufficiently correctly for practical purposes. Twenty years afterward, when I was captain of the *Tennessee*, and Sears, then a captain, was naval attaché at Tokio, Japan, I had a talk with him there. Sears then told me that the “estimates” he made that afternoon were the result of a little conspiracy, and that all those distances had been carefully measured on the chart beforehand and memorized. Sears said the performance had been intended as a joke, but that I had taken it so seriously, they had all agreed to say nothing about it.

From Newport the *Chicago* went back to the navy-yard in Brooklyn, and I reported the range-finder ready for test. An official test was held (I think in November,

1889) by a naval board of which Lieutenant-Commander Couden was the head, and the range-finder fulfilled satisfactorily the requirements for acceptance that had been prescribed.

Certain faults in the *Chicago's* range-finder, however, were so obvious that I invented another range-finder, on the same principle, but of a more practical design. A contract was made by the Bureau of Ordnance, and two range-finders of this design were installed in the U. S. S. *Baltimore*, then fitting out at the navy-yard, Norfolk, one range-finder being mounted on the bridge for measuring distances ahead and astern, the other range-finder mounted on the fore-and-aft line of the ship, with one instrument in the bow, and the other near the stern, for measuring distances on either side. These range-finders were tested by a board of which Commander Batcheler was the head, and accepted.

At this time Commodore W—— was commandant of the navy-yard, and his brother-in-law came to visit him. Commodore M—— had been the previous commandant. One afternoon the brother-in-law walked about the navy-yard, and fortune took him on board one of the ships then being repaired. An old-time calker was sitting on his funny little stool on the quarter-deck, poking oakum into a seam with a sort of a chisel with his left hand, and hammering the oakum down into the seam with his right hand. In those days calkers were not famed for amiability. Not knowing this, the brother-in-law tried to get into conversation with the calker, but with no success. Finally the brother-in-law conceived the idea that it might be well to tell him of his relationship to the commandant. Then the following brief conversation ensued:

“Commodore W—— is my brother-in-law.”

“Do you know Commodore M——?”

“No.”

“Well, he ’s another ————.”

The *Baltimore's* range-finder seemed to be pretty good,

but it was not "direct reading"; that is, the operator had to move a pointer along some resistance wires until the needle of a volt-meter came to zero, and then read what the pointer indicated. So I devised a direct-reading instrument in which the volt-meter needle itself would point directly to the range-mark. The principal difficulty I found was in introducing a correction to take care of cases where the target was not perpendicular to the base-line, but several degrees away from it. I was so fortunate as to be able to conceive of a plan whereby the correction was automatically made, and without introducing any additional apparatus whatever, by simply proportioning the resistances in the circuit according to a mathematical formula which I discovered. I had an apparatus constructed, and it worked exceedingly well when the target was not more than forty-five degrees away from perpendicularity to the base-line.

This apparatus was put into the *Baltimore* by arrangement with the Bureau of Ordnance, the old apparatus being taken out and junked. I did not attempt on this occasion to put a range-finder on the bridge of the *Baltimore*, because it had become obvious that the base-line was too small.

This range-finder was a remarkable success. Not only was it better than any other range-finder that had ever been produced, but it was really able to measure distances with sufficient accuracy for the short ranges then used. In those days it was not considered worth while to fire at ranges greater than three thousand yards, because, with the sights then used on navy guns, the errors of sighting were so great that shooting at a greater range than three thousand yards would be a waste of ammunition. This was so clearly recognized that the specifications for my range-finder did not require it to measure greater distances. In fact in October, 1890, two thousand yards was considered to be about the limit of range for accuracy.

The range-finder was ready when the *Baltimore* went

out to sea for the official tests in firing the guns in the spring of 1890. The *Baltimore* fired guns on both sides, steaming around a target, and the range-finder stood the test. According to the contract made for this instrument, however, it was not to be accepted until after a year's trial in the ship in actual service at sea had demonstrated its practicability, and the fact had been established to the satisfaction of a board of officers.

In the latter part of 1890 the *Baltimore* went to Europe with the remains of John Ericsson, and she remained in European waters for nearly a year. Some time in June, 1891, *The New York Times* published the following paragraph:

A naval officer writing from Europe says that while the *Baltimore* was at Toulon, nothing on board the ship excited so much favorable comment from foreigners as the Fiske range-finders. Just now, says the writer, "when our growing navy is accused everywhere of being simply a copy of foreign navies, it is worth while to be able to point out something in which foreign navies admittedly copy us."

The *Baltimore* had recently held target practice in which she engaged a floating target at distances which were unknown except in so far as the range-finder indicated them. *I am quite sure that this was the first time that a range-finder was ever successfully used in naval gunnery.*

During the trials of the *Baltimore* before she left the United States the most important idea I had ever had flashed into my mind. Firing had finished with the port battery and begun with the starboard, when a large fleet of schooners got in the way, and practice had to be stopped for a while. I amused myself by looking at the schooners through the telescope of the forward instrument, and noticing how definitely the cross hairs of the telescope moved across their sails with the gentle rolling and pitching of the *Baltimore*. I had watched this in an idle way for a few minutes when the thought came

that anybody could fire all the guns in the broadside from that place, and hit the target every time, by setting the telescope at the angle of depression equal to the proper angle of elevation of the guns, leaving the guns parallel to the deck, and firing when the roll of the ship brought the cross hairs on the target.

In a few minutes, however, cold, pitiless reason pointed out the practical impossibility of mounting the guns so that the angle of elevation of all would be the same.

Nevertheless, I decided to patent the scheme, reasoning that, as the years went by, ships would be constructed of increasing size and with increasing perfection of workmanship. On May 15, 1890, I applied for a patent on "A Method of Pointing Guns at Sea." The Patent Office made numerous objections, but finally granted a patent on September 9, 1890. The patent was of course illustrated and described in the *Patent Office Gazette* which was published monthly and sent to all the civilized countries in the world, and to the ordnance offices of the armies and navies of those countries.

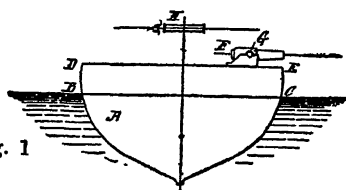


Fig. 1

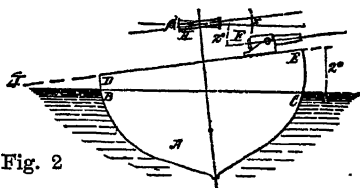


Fig. 2

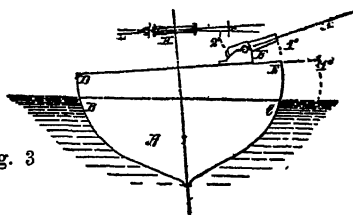


Fig. 3

Method of Pointing Guns at Sea.
U. S. Patent No. 435,925, dated
September 9, 1890.

The application was illustrated with the accompanying diagrams, and ended with the following paragraph:

"I claim—

"The method of pointing a gun located on a rolling, heeling or vibrating platform, which consists in adjusting a telescope, also located on said platform, and

movable on a transverse axis approximately parallel to that of the gun at an angle to the axis of the bore of the gun equal to a certain predetermined angle of elevation necessary to cause the projectile fired from said gun to travel to a given target, and, second, noting the moment when the line of sight of said adjusted telescope is caused by the movement of said supporting platform to intersect said target."

The claim was granted by the Patent Office, and formed part of the Letters Patent, when finally issued. It underlies the whole practice of modern naval gunnery, and it distinctly describes the Director System recently adopted and usually credited to Admiral Sir Percy Scott, R.N., by which the instant for firing all the guns in a ship's broadside is determined by the intersection with the target of the cross hairs of a telescope, placed in a convenient position.

I did not think the scheme would become practicable for some years to come, for the reason that it depended for its successful use on such an exact parallelism of the platforms on which the guns turned, that if the guns were given any angle of elevation with reference to those platforms, they would all be at that angle of elevation above the horizontal. The British and Germans did this many years later, and achieved such successful results at target practice, that the system was taken up recently by our navy and others, and may now be considered as definitely adopted.

My main idea in taking out the patent was to combine it with some other patents that I already had on "range and position finders." By the method and apparatus described in those patents the distance and direction of a distant object could be ascertained, and all the guns of a fort, by means of electrical arrangements on their elevating-gear and training-gear, could be concentrated on it from central protected station; and I thought that it might become possible in the future to put similar electrical gear on the guns of a ship, and by

combining this system with a range-finder having two armored observing stations, to direct and fire all the guns correctly from the conning-tower.

Realizing the impossibility of using the system successfully for firing all the guns together, I endeavored to adapt it to individual guns. I sketched many schemes on paper for mounting a telescope on a ship's gun, much as one is mounted on a musket, but arranged so that, when the gun recoiled, the sight itself would not come back with the gun and strike the gun captain in the eye, but would stay away from it; that is, the gun would slide under the sight. The favorite plan was some electrical mechanism, which, when the gun captain pressed the firing-button, would cause the telescope to slide forward. Some of the plans were not very bad, but they all seemed too dangerous, because the mechanism might fail. In those days, it must be remembered, we did not have any guns that recoiled in the line of fire except small guns.

One evening the idea came sharply:

"You need n't put the telescope on the gun; just put it on something that moves with the gun, but does not recoil."

A simple mechanism for carrying the idea into effect was quickly devised, and on March 9, 1881, I applied for a patent on "A Telescopic Sight for Ships' Guns."

The Patent Office, after fighting a year and a half, finally yielded and granted a patent, which was issued on September 5, 1893.

After filing the application, I constructed an instrument. The telescope was like those used on the *Vesuvius* range-finder. It was two feet long; the object-glass was two inches in diameter; the field of view was eight degrees; the magnification was four.

It was constructed by the late W. E. Stackpole, who had been making high-grade telescopes for surveying and astronomical use nearly all his life. I have never seen a better telescope than the one he made for the first naval telescope sight in 1891. The field was flat, the

definition excellent, and the cross wires as fine as was compatible with strength and clear visibility. They were secured very firmly in the exact focal plane of the object-glass, and there was no discoverable parallax. The wires formed a single cross.

That the telescope was rugged is proved by the fact that it remained in excellent condition, without any repairs whatever, for several years, two and a half of which were spent in the *Yorktown*, and one and a half in the *San Francisco*. That it was pretty nearly what a telescope for a telescope sight ought to be is shown by the strong resemblance between it and the telescopes issued in sights during the last few years.

Shortly after making this sight, I wrote to Commander Folger, chief of the Bureau of Ordnance, asking his permission to show it to him. He replied in the affirmative, specifying a certain hour in the afternoon a few days later. I sent him the sight and followed it the next day.

I appeared at the bureau at the designated time, and saw the instrument on his desk.

Our interview did not last half an hour. At first Commander Folger was opposed to my idea; but as soon as I had explained it fully, he reversed his attitude completely, and declared that I had made a very great invention.

"You have changed naval gunnery from a game of chance into a science," he said.

When I was taking my leave, he said that he thought the best way in which to get an intelligent trial of the sight was to send it to the *Yorktown*, because Commander Chadwick was the captain.

It has been my misfortune during all of my professional life to have been almost constantly under the suspicion of being unsafe and of unsound judgment, not because I have ever had any accidents of any kind, but because I have continually urged projects which to most people seemed unpractical. I have been navigator, executive officer, captain, and flag-officer under virtually all

the conditions of both peace and war, and have never, so far as I can remember now, made a grave professional mistake or been seriously accused of any neglect of duty. Yet I have always been called visionary and unpractical, because of the things I have proposed, though every single thing except one that I have seriously proposed was ultimately adopted after protracted trials. That one was my four-arm semaphore for signaling between ships. It was applied to several ships, and it received favorable reports, and the only thing that prevented its adoption was the invention of the wireless telegraph, which made it unnecessary. Every one of my inventions brought me mostly ridicule, but none of them so much as the naval telescope sight. I was frequently told by officers that an officer who really understood his profession could not have seriously considered such a ridiculous idea, and much less could he have submitted it for trial.

During the time that I was at the Electrical Exposition in 1884 I had been on a committee charged with reporting on the possible uses of electricity in war. As time went on, I had become more and more impressed with the possibilities of electricity for war purposes, and so I was glad to accept an invitation from the Franklin Institute of Pennsylvania to deliver a lecture in Philadelphia on "Electricity in Warfare" in the early part of 1886. My lecture was treated with good-natured tolerance. Four years later I delivered a lecture with the same title on the evening of January 1, 1890, and this lecture was treated with the utmost consideration. In fact, I was amazed at the publicity which it received not only from the papers in Philadelphia, but from all the large newspapers in the country, and not only in their news columns, but in editorials as well. The lectures were nearly the same, but four years of education had elapsed.

In May, 1890, I had an article in *The Forum* on "The Naval Battle of the Future." I have just re-read the

article, and I cannot but feel surprised at the good guesses which that article contained. It was devoted for the most part to indicating the increasing uses of scientific apparatus of all kinds, and the inevitable replacement of the rough-and-ready methods of "seamen" by methods and instruments of precision, and to pointing out the advantages which would accrue to that navy which should be the most far-sighted and energetic in adopting and adapting them.

I am sorry that *it was not our navy, but the German*, that followed the course suggested in my article.

On October 23, 1890, I gave a lecture under the auspices of the New York Electrical Society, but in the Columbia School of Mines. The lecture was called "The Modern Electrician in Time of War." One paragraph stated that in time of war:

"The Navy Department would be even more hurried. We should certainly be called upon to commission a great many warships, and to equip destroyers and a great many merchant steamships. We should have to do the things that we did on the outbreak of our last war; and in addition we should be confronted with the necessity of fitting all kinds of fine apparatus, the necessity of fitting electrical appliances of all descriptions, besides securing gun circles in place with mathematical precision, and of accomplishing the manifold fine work that is required with the ordnance, navigation and engineering equipment of a warship of the present day."

To meet the difficulties I said, "I propose the formation of a corps of naval and military electricians, to assist the army and navy in their work."

This lecture excited a great deal of attention, and was commented on favorably in editorials in the principal papers. Nothing was done, however, to carry out the suggestion practically until about eight years later, during our Spanish War, when a corps such as I proposed, but including mechanical engineers, was formed by Captain Eugene Griffin, vice-president of the General Elec-

tric Company, who was a graduate of West Point.

About the same time that I applied for a patent on my first range-finder I applied for a patent on a "range-and-position-finder" which was applicable to forts rather than to ships, and which measured and indicated not only the distance of an enemy ship, but also its direction. It may not be clear why apparatus should be needed to indicate the direction of a ship; it may seem that it would only be necessary to look at the ship and note in what direction it lay. So it is necessary to state that the apparatus was intended to give the information to men handling guns behind fortifications, in positions such that they could not see the enemy ship, and the enemy ship could not see them. Such a range-and-position-finder was finally constructed and installed at Fort Hamilton, New York.

The second range-finder which I put into the *Baltimore* was equipped with telephones, secured to the telescopes and the reading instruments so that conversations could be carried on between the observers and the man who read the range indications on the volt-meter. *This was the first installation of the telephone ever made on board any ship.*

A few months later, when I was inspector of electric lighting at Cramps' shipyard, I asked Mr. Hayes, the chief engineer of the Bell Telephone Company, if something could not be done to introduce the telephone on board ship. Mr. Hayes became interested, and he and I devised two sets of apparatus. One set comprised a circuit going from the executive officer's office to the master-at-arms' desk, and represented the easiest conditions of telephone service on board ship; the other circuit ran from the bridge to the engine-room, and represented the most difficult conditions. Mr. Hayes secured the permission of his company, and I secured the permission of the Navy Department, to have these apparatus put into the *Philadelphia* for trial in service. The report made later about the circuit from the execu-

tive officer's office to the master-at-arms was favorable, but the report about the other apparatus was that it was not practical for ship use. Investigation developed the fact that the only trouble with this circuit was that two wires about two feet long rubbed against each other, and scraped off the insulation between them. Of course this was easily rectified.

This was the second installation of the telephone ever made on board any ship.

CHAPTER X

LONDON, PARIS, AND THE *FORMIDABLE*

IN October, 1890, I applied for six months' leave, with permission to go to Europe, and my request was granted. I was going as a representative of the American Range Finder Company, which had secured patents on different forms of my range-finder, position-finder, gun-director, telescope-sight, and range-indicator in the principal foreign countries. My wife and daughter and I sailed in the early part of November, and landed in England, from which we went afterward to France. Before the end of my six months' leave I applied for six months' extension of leave, and my request was granted.

I spent my time in Europe in demonstrating my range-finder to the British, French, and Italian navies. It is difficult for me to realize now how I could have done such a thing, or how it could have been permitted, unless I realize at the same time the state of public opinion then even in the navy. At that time there was absolute conviction in the minds of everybody that the United States would never go to war again, and that our navy was maintained simply as a measure of precaution against the wholly improbable danger of our coast being attacked. It was not considered proper for a country as great as ours not to have a fine navy; but the people regarded the navy very much as they regarded a beautiful building or fine natural scenery, a thing to be admired and to be proud of, but not to be used. I did not make the slightest secret of my intentions. In fact, I was careful to proclaim them as publicly as I could, and during all the time I was in Europe I got all the publicity I could in the papers for the trials which my in-

struments received. I was careful to tell the authorities in Great Britain, France, and Italy that, although that procedure was not common in Europe, I had to insist upon it for my own protection in the future. The officers of our navy who talked to me about the matter expressed themselves as believing that my inventions redounded greatly to the credit of the navy, because they were the only things which saved the United States Navy from the accusation of being in every way a copy of foreign navies.

My wife and little daughter and I crossed the Atlantic in the *City of New York*, an enormous vessel, we thought, which, with her sister, the *City of Paris*, was considered the finest vessel afloat. After a narrow escape from ramming the coast of Ireland in a dense fog, we arrived at Liverpool early one morning, and promptly took the train for London. By an arrangement which I had made in New York, a representative of some baggage company greeted me on board at Liverpool, and received the keys of our trunks and undertook to get them past the custom-house authorities in Liverpool. We arrived at the Langham Hotel that evening, and our trunks joined us a few hours later.

We stayed in London about a month, that is, till Christmas day. I had never been in London before, and I looked forward to seeing London with a good deal of awe. I was not so awestruck when I saw London as I had expected to be. Everything looked dirty and smoky. The streets seemed narrow and crooked, the houses old-fashioned, the hotels crude, and the business methods far behind those of New York. The telephone system was so inefficient that telephones were rarely used, there was no such thing as messenger service, and type-writers were rarely to be seen.

I had a letter of introduction to Mr. W. O. Smith, head of the firm of Elliot Brothers, the great manufacturers of electric and scientific instruments, and he undertook charge of my range-finder experiments and demonstra-

tions in England, at the expense of the American Range Finder Company in New York. I was then just thirty-six years old, and Mr. Smith was a little younger. I found him a very interesting man, with a delightful combination of good nature, good looks, scientific knowledge, progressiveness, and business ability. He had one or two typewriters in his offices, a number which did not seem very great for a large establishment that made scientific instruments. Mr. Smith told me that he used the typewriter considerably for routine business correspondence, but that when he had a long and important letter to write, which had to be very carefully expressed, he always wrote it with his own hand.

As Mr. Smith was an exceedingly busy man, and I was enjoying a brief period as a gentleman of leisure, I sometimes had to wait in Mr. Smith's outer office. There was a bookkeeper there, and I noticed him day after day copying figures in big books, and drawing red lines with a pen, along a cylindrical ruler. The monotonousness of that man's life, with its interminable copying of figures day after day, and drawing of red lines, aroused my pity, so gray and tame and devoid of any possible interest did it seem. I said to him one day:

"Bookkeeping requires a great deal of care, doesn't it?" I seemed to have touched a spring; for the bent figure straightened up, an earnest look shot into the eyes, and he said to me, with a grave intensity:

"Oh, yes, sir; it requires the greatest possible care. You have no idea how much care and brain work it requires, and how much responsibility it is. But I don't mind that, because it is so wonderfully interesting."

Mr. Smith installed my range-finder on the roof of his building, and one day the ordnance board came to examine it. I think there were twelve members of the board, with Lieutenant General Hay at the head. At one stage of the proceedings I was addressed by Colonel Watkin, the inventor of the famous Watkin Position-Finder, with a remark something like this:

"I see, Lieutenant Fiske, that your range-finder works very well for getting distances perpendicular to the base-line, and I can see that, even if the target is eight degrees away from perpendicularity to the base-line, an error of only one per cent. would be introduced, because the cosine of eight degrees is only one per cent. less than the cosine of zero degrees. I suppose you do not attempt to get ranges unless the target is within eight degrees of perpendicularity to the base-line."

Then I explained to him and to the other members of the board how the instrument automatically showed distances even when the target was as much as forty-five degrees away from perpendicularity from the base-line, and I proved that it did so by practical demonstrations.

I did not get a copy of the board's report for some months. When I did receive it, I saw that it contained a statement to the effect that the use of the range-finder was restricted to the measurements of distances of objects the direction of which was perpendicular to the base-line.

One evening my wife and I went out to dine at the house of Mr. Edwin Abbey, the artist. A dense fog mixed with coal-dust overhung London, so that we saw no definite object from the time we left our hotel till we reached Mr. Abbey's house, or from the time we left his house later until we reached our hotel. We rode on top of an omnibus, which we were advised to do as a measure of safety, and I have a confused memory of bumping into other omnibuses, seeing a faint glow of light now and again from some omnibus-lamp near at hand, and of hearing a great deal of profanity from omnibus-drivers. The next day, when walking on the sidewalk, I could not see my own feet. I was told that fogs of this kind in London were called "pea soup," because of their color, due to the mixture of fog and smoke.

One afternoon I met Poultney Bigelow in London, and a conversation resulted substantially as follows:

"I have just been to a splendid lecture on tactics at

the United Service Club. How many British Officers do you think were there?"

"Oh, I don't know; about twenty-five."

"Well, there were just six British officers present. If a lecture like that had been given in Berlin, every officer in Berlin would have been present by order. If the British Army ever comes up against the German Army, the German Army will stand them on their heads."

We started for Paris on Christmas morning, 1890, and reached Paris that evening in time for dinner. A cold trip it was. My little family, with the addition of a pretty red-headed nurse-maid named Lili Grosclaude, had a compartment to ourselves, which was warmed a little, and only a little, by warm-water cans. We kept warm as best we could by dancing jigs together.

How different Paris was from London! That such a great difference could exist between cities so close together seemed surprising at first thought; but on second thought one realized that what makes cities and persons alike is not so much propinquity as heredity.

One of the first things I noticed in Paris the next day was the word "*engelures*" in the drug-store windows. On inquiry, I ascertained that this was the French word for chilblains. As I had hardly heard of chilblains since I used to play snow-ball, I was surprised that the word should be accorded such publicity. In a few days I found out why.

One day while we were seated at *déjeuner* in the delightful Hôtel Lafond a magnificent creature rode up to the door on a magnificent horse, attired in a magnificent uniform, and delivered an envelop nearly a foot square. He delivered the envelop to some one at the door and then rode away, his metal accoutrements gleaming in the sun, and his sword clanking an accompaniment to the beat of the hoofs of his charger upon the pavement. Then this envelop was brought into the *salle-à-manger*, where we sat, and delivered with much dignity to me. I had never felt so grand before, and I have

seldom felt so grand since. The letter inside the envelop was signed by the minister of marine, and told me that orders had been given to the commander-in-chief of the Mediterranean Fleet to test my range-finder on board the flag-ship the *Formidable*, then at Toulon. Toulon was, and still is, the principal French naval station on the Mediterranean.

The American Range Finder Company had made an arrangement with the Compagnie des Forges et Chantiers like the arrangement it had made with Elliot Brothers in London. The great ordnance inventor and engineer Canet was the head man of this company in Paris, and through him I made the necessary arrangements for sending my apparatus to Toulon and for the experiments to be made there. M. Canet I found, of course, to be a very interesting man. He spoke English perfectly and was a man of real, not sham, ability. In some way which I cannot explain, however, he did not inspire confidence, and I found afterward that many people did not have confidence in him.

A pleasant, but exceedingly expensive, trip, made mostly by night, took me from Paris to Toulon, and I never shall forget the first view I had of the blue Mediterranean when the train reached the top of the low mountains that skirt its northern shore.

I arrived in Toulon in the latter part of the forenoon of some day in January, 1891. I was driven in a funny little hack to the Grand Hôtel, and given a comfortable room, with a red-tiled floor and white-washed walls, from the windows of which I could see some beautiful and rugged mountains only a few miles away. A delightful *déjeuner* was served about noon, the guests congregating on both sides of long tables in table-d'hôte fashion; and, as I was somewhat tired and warm, I was glad to see decanters of red wine and white wine placed at frequent intervals along the tables. I found afterward that for *déjeuner* and dinner white wine and red wine were served

without extra charge, while an extra charge was made for coffee.

I was surprised at the length of time the people spent at this *déjeuner*, or lunch; but I reminded myself that I was in the south of France, in sunny Provence, and that I had never heard that people work very hard in Provence. I learned afterward, however, that workmen and clerks started to work at seven o'clock in the morning, and worked until noon; and that, though they took a recess from noon until two o'clock, they began to work again at two o'clock and worked from then till seven.

I remained in Toulon and in its neighborhood for six months or more, and I have never enjoyed life more thoroughly. The climate was delightful, though sometimes it was a little hot in the middle of the day; and I liked the people tremendously. The two whom I remember the best were a Commander Simpson of the Chilean Navy, now a vice-admiral, and a M. Savattier, a man somewhat younger than I, who had charge of all the electrical work in that great ship and engine building company known in French by the name of *Compagnie des Forges et Chantiers*. I got to know Simpson very well, and I found him a highly accomplished and agreeable man. One ridiculous feature of our acquaintance was that we always talked in French together, though we both spoke English better than we spoke French. Frequently, one of us would realize this and begin to talk in English; but we would soon drift back again into French. This was a curious fact that I cannot explain except on the general principle of the "influence of environment."

The morning after my arrival I took my early breakfast in the open air in the grounds of the hotel, and then went to the water-front, where I embarked in a small steamer that plied back and forth across the Bay of Toulon. A trip of about half an hour brought us to the town of La Seyne, where the ship-building works were situated, and are still situated.

I found M. Savattier in his office, and I was received with that flattering and courteous cordiality which is so charming an attribute of the French gentleman. I was taken by him and presented to the great man (the truly great man) M. Legane, who was the presiding genius at the works, and one of the first naval constructors of France. I left the office of M. Legane feeling as though I owned the entire ship-building plant. About five years after this I received a letter from Savattier telling me of his marriage with the daughter of his chief. I have heard recently that Legane is dead and that Savattier took his place.

I remember few men with so much pleasure and respect as Savattier. He was one of the most intense workers I have ever met, and he had as clear a head and as good a disposition and as clean a character as any merely human being could have. During the months in which we were together in the difficult relative positions of the inventor and the engineer who had to make the inventor's inventions work, we did not always agree; but Savattier's sincerity was so profound, and his reasons for his actions were so good, and set forth with such courteous clearness, that in the end I usually followed where he led.

We set up my instruments in one of the rooms of the company, and Savattier and I with some workmen soon got them to working well. The fact which stands out most clearly in my memory about this stage of the work is that the chilblains which I had contracted in Paris attacked me with extreme ferocity when I suddenly changed to the warm climate of Toulon and that Savattier had a workman bring in buckets of cold water at intervals for me to hold my feet in.

When we had got the instruments adjusted again, the company installed the instruments on the upper deck of the *Formidable*. I looked with amazement and almost with incredulity at this ship and at the other ships near by, the *Marceau*, the *Amiral Duperré*, the *Hoche*, and

others. As I was only an American officer, I was accorded privileges that would not have been accorded to a European officer, and was permitted to see things such as would have been kept close secrets from an officer of a navy that was seriously regarded.

I did not sleep on board the *Formidable*, but I was told that I was a member of the wardroom mess in every way except that I was not allowed to pay any mess bill, because that was paid by the French Government. No restriction whatever seemed to be placed upon me, for I went into the conning-tower, into the turrets, into the engine-rooms, and wherever I wished to go, sometimes alone, and sometimes with an officer or sailor. I did not ask many questions, of course; but I never saw the slightest disinclination to give me any information I asked for. I went back and forth in the navy-yard whenever I wished night or day, and I even went out with the fleet when it exercised at fleet manœuvres. At these manœuvres I usually stood on the bridge with the captain and other officers, and saw everything that they did. There were twelve battleships in the fleet, and about twenty-four destroyers, and all manœvered together. I had heard a great deal about the inefficiency of the French Navy, but I remember wishing that the United States Navy was inefficient in the same way. The manœuvres seemed to me to be conducted with perfect skill and success and at the highest speed attainable, and I could see nothing to criticize unfavorably. On board the *Formidable* a like efficiency seemed to prevail. Everything was done quietly, systematically, and effectively. I was present at a number of conferences on the subject of my range-finder, held by the captain and certain officers of the ship. The captain presided, of course, and I was struck with the fact that, though the officers were very respectful to him, they did not hesitate in the slightest to disagree with him in opinion. The captain's name was, I think, Roustan, and he was a brother to the French minister to the United States at that time.

I acquired an enormous admiration for the French Navy, and I think it was deserved. How this magnificent navy was ruined by one man, Camille Pelletan, who was secretary of the navy for four years, is a matter of world-wide knowledge and an indication of the conditions of French politics at that time.

It is also a warning to other nations.

The only time when it was intimated to me that my presence was not desired on board was one evening in the Golfe Juan, about fifty miles from Toulon, and perhaps five miles from Cannes, where the French fleet anchored during the series of manœuvres. In the latter part of the afternoon Savattier said to me that one of the officers of the ship had intimated to him that there was to be a sham attack on the fleet that night by torpedo-boats, and that perhaps Lieutenant Fiske might feel more comfortable on shore.

So Savattier and I went ashore. We found a quiet country inn, and Savattier told me that he would show me what a beautiful dinner we could get there for a very small price, having only the things to eat and the wine to drink that were grown in the immediate locality. I remember we had a liter of red wine (a liter being about one-tenth more than a quart) and that it cost less than a franc. Not only was this wine delightful to the taste, but it imparted a pleasant feeling of content; so that the walk to Cannes along the smooth, hard road, past beautiful villas, with green lawns and trees and bright flowers on our right side, with the occasional sound of a guitar and voices singing, while the dark-blue Mediterranean was on our left side, and the bright-blue sky was overhead, the whole scene illuminated by a gorgeous full moon, made a picture in my memory much clearer and brighter than other pictures made but yesterday.

The second watch officer of the *Formidable* was Lieutenant Viaud, who had written a number of novels over the name of "Pierre Loti," of which the one that I liked the best was "Le Mariage de Loti." Viaud was a

quiet, rather small man, with a low voice and a manner more courteous even than is usual among Frenchmen. His diction was said to be remarkably pure and correct, even to a degree which most professional literary men could not equal, though he was not a student of rhetoric, and had been educated solely as a naval officer. He called on me one day at the Grand Hôtel, and sent up a modest little card, on which was printed his name and rank. At one time I left Toulon and went to England, being absent from Toulon for about two months. During this interval Viaud was elected a member of the French Academy under the name of Pierre Loti. Shortly after I returned to Toulon he again called upon me at the hotel, but this time he sent up an enormous card on which were engraved only the words "Pierre Loti."

This indicated a little vanity, perhaps, but it was not altogether a thing to be wondered at; for an officer of the *Formidable* explained to me that the members of the French Academy outranked not only every officer in the navy, but everybody else in France except the President.

One afternoon when I was going ashore in the boat after the mid-day meal I remarked that I had a headache, and asked what was good for it. One of the officers said that absinthe was a remedy. I told him I had never taken absinthe, but should like to try it; and I asked him how much to take. He told me to go to a café and get the ordinary drink that was served. I did this, and swallowed the whole drink, though I did not like the taste at all. Then I walked toward the hotel; but as I neared it, the thought occurred to me that perhaps, as I was not accustomed to absinthe, it might intoxicate me, and that therefore I had better walk out somewhere where nobody knew me.

I did this, and walked for a considerable time, observing my gait very carefully lest I stagger. I saw no signs of this. After walking perhaps a mile, I came

to a small inclosed car on wheels, such as photographers sometimes use in the United States, on the outside of which was a written statement to the effect that Madame Somebody was inside the car and that she could read the future. It occurred to me at once that this was a good opportunity for me to ascertain exactly what was going to happen to me in my various projects.

So I knocked at the door, and was admitted by a woman who said that she was a clairvoyant and could tell my fortune. I asked her how much she charged, and she said five francs; then correcting herself hastily, she said ten francs. I told her I was very glad to meet her, because I was desirous of knowing what was going to happen to me. So she told me what was going to happen to me, and I gave her ten francs. Just as I was about to go, after thanking her cordially, she told me that there was something about my future which was very exciting indeed. I asked her what it was, and she said she could not quite see unless she went into a trance. I asked her to go into a trance, but she said that would cost fifty francs. I told her I did not care if it did, because I wanted to know. Then she called for "Louis," and Louis came into the little room, and put her into a trance, and she told me the most wonderful things.

I was very much impressed indeed, and I walked away with a feeling of great elation; but just as I was walking up the steps of the Grand Hôtel, some cloud seemed suddenly to pass out of my mind, and I saw what a fool I had been. The next day I told some of the officers about it, and asked if it could have been due to the absinthe, and they said, yes. One of them told me that if a man not accustomed to absinthe took an ordinary drink of it, it was apt to give him "*les idées bizarres*," to make him partly crazy for a while.

CHAPTER XI

SPEZZIA, *IL TERRIBILE*, AND CAP BRUN

DURING the time that the first trials of the range-finder were going on aboard the *Formidable*, I was in correspondence with the ministry of marine in Rome about having my range-finder tried on board an Italian ship, and when these first trials were completed the Italian Government had given their consent. Previous to this the Italian technical and other papers had devoted considerable attention to it.

I left Toulon for Spezzia, the principal naval station in Italy, in the early part of March, having sent my apparatus on ahead. As I did not speak Italian, the company kindly loaned to me a man as interpreter who spoke both French and Italian and whose name was Laurent Bisio. Bisio was of the upper grade of workmen, but he was one of the handsomest men and one of the most distinct characters I have ever met. To me he seemed always to be acting. Whether he was or not I do not know; but he seldom said anything without gesticulating, and his gesticulations were not little awkward jerks, but wide sweeps of the arms and body, accompanied with what might be called facial gestures. When I first met him, realizing that I might keep him from home for weeks, I asked him if he was married. He immediately raised both arms high above his head with a magnificent sweep, launched forward with his left foot, which he brought down smartly on the floor, rolled his eyes, and exclaimed in a loud voice, “*Ma foi, pourquoi?*” (“My faith, why?”)

He went to Spezzia ahead of me with the apparatus, and the first day after my arrival there he became so

angry with me because he saw me talking French with some Italian officers that he gave a dramatic impersonation of outraged dignity on the spot, and declared his intention of going back to Toulon "*toute de suite.*" A little judicious flattery brought him to terms, however; and after that he was not only good natured, but exceedingly efficient.

As I had never been in Europe before, I decided to stop one night at Monte Carlo. I arrived there about six o'clock in the evening, partook of a delightful dinner at one of the restaurants, and spent the evening at the casino. Fortunately, my visit happened on a night when the moon was full and shining from an almost cloudless sky; so that all the beauties and glories of Monte Carlo in the moonlight that I had heard about were presented to me in their perfection. The casino and the gambling-rooms were interesting and exciting, and so were the beautiful women whom I saw strolling about, clothed in the latest Parisian styles, and exhibiting the height of the elegance and expensiveness of the world of fashion. I spent the entire evening in the casino, so fascinated with the scene and with the possibilities which the scene suggested that I felt not the slightest temptation to gamble at the tables. Had I stayed there longer, until the novelty had passed away and the tinselly character of its beauties had become revealed, doubtless the temptation to gamble would have come to me. But that first night and only night I spent at Monte Carlo presented a scene so wonderful that mere gambling seemed dull and tame.

After the evening's play was over, I walked about the beautiful grounds in company with some young man who, for a few francs, harrowed my soul with the most ghastly stories of suicide I had ever heard. On my way to the hotel afterward I half expected to stumble over suicides at short intervals on the sidewalk; but if there were any, they escaped my notice.

Next morning I was to take the train at ten o'clock. I

had a small trunk with me, and as I knew I should have to open my trunk at Vingtimille, on the border between France and Italy, I put my hand into my pocket, to see if I had my trunk-key with me. This happened at the railroad station, while I was waiting for the train. To my horror, I could not find my key. As I had a few minutes to spare, I drove quickly back to the hotel, and rushed to my room; but I could not find the key. I interrogated everybody I could see there, but without success. So I drove down to the station again, and arrived there just in time to catch the train.

The trip to Vingtimille lasted perhaps three hours, during which I searched my pockets at intervals to find the key, but without success. When we arrived at Vingtimille, our trunks were taken into the official room for examination, and I was asked for my key. I remember the expression of mingled contempt and incredulity on the face of the examiner when I told him I had lost my key. I have never felt more like the "meek in spirit" than I did then. My status and my self-respect were raised, however, when I produced a letter from the minister of marine in Rome. The official then said he would telegraph to Rome and get permission to let my trunk go through without examination; but that the answer could not possibly come back in time to let me take the next train, and I would have to wait for the following train.

So I walked about the rocky and picturesque old town, which was so strangely placed on the side of a mountain that it looked as if a man could fall from one end of the town to the other and break his neck.

Finally, a favorable answer came, and I took the following train for Spezzia. Feeling much relieved, I sat down on my seat in my compartment, and thrust my hands into my trousers-pockets with a feeling of content. There in my right pocket, where it had been all the time, was the key of my trunk!

Experiences a little like this have occurred to me

sometimes since. I suppose the reason is that, if the mind is intent on any subject,—if, for instance, it is trying to reason out the whereabouts of a lost article,—the fingers lose their sensitiveness temporarily. The mind cannot be concentrated on two things at the same time.

I arrived at Spezzia late in the afternoon, about dusk, and just before dinner, an excellent time for arriving anywhere. I was driven to the Grand Hotel, and then there ensued half an hour of talking and bargaining with the hotel proprietor about the room I was to have, the various extras which I desired, and the prices I should have to pay. After a long and laborious discussion, it was arranged that I should have a large and handsome room, with light on two sides, finished in red, and that I should have a certain large number of candles, hot water, etc., with three meals, and red and white wines for lunch and dinner, all for ten francs, or about \$1.90, per day.

I stayed in Spezzia for about two weeks. I think I had a better time in Spezzia in those two weeks than I had ever had before or have ever had since. Vice-Admiral Racchia, the commandant of the station, did me the honor to call on me and ask me to dinner for the following evening. It seemed to me that virtually all the naval officers in Spezzia did the same thing. They seemed to make me the guest not only of the station, but of every officer in the station. There was a delightful company at the hotel also, mostly army and navy people; and after dinner, during which there was always music by a band or orchestra, the entire party would assemble in the parlor for social conversation and for piano music and singing of a social kind. Of course the music was always good.

The admiral's aid was a lieutenant named Scotti. One day we were walking in the arsenal, or navy-yard, and he suddenly exclaimed, "Oh, you are an inventor; perhaps you would be interested in a new American invention

which we have just received." I followed him into the admiral's offices, and Scotti took me up to a desk, on which was an object covered with a black cloth. Scotti removed this cloth and disclosed a type-writer. I asked him what it was, and he said it was an invention for writing. Then he put a piece of paper into the machine, and struck the key marked "A," and then showed me "A" printed on the paper. I asked him if he thought it was a good invention, and he replied about as follows:

"Well, it is very ingenious, but I do not know whether it is practical or not. Of course it has the advantage that it is clearer than the handwriting of some men; but on the other hand it has a disadvantage of being extremely slow."

My range-finder was installed on board a small ship called *Il Terribile*. We went out day after day, making tests with the instrument. These tests were conducted with the greatest care and precision by a special board of which the head was a rear-admiral. I had never been in Italy before, and so the memory of those radiant days, steaming over the blue-watered Bay of Spezzia, surrounded by picturesque mountains, and rocks and campaniles, when the weather was neither hot nor cold, in the company of those delightful men, made an impression on my mind and heart that is clear and beautiful still.

I had made arrangements with the War Department of Italy also for tests of my range-finder in some fort, but for some reason which I do not now recall I had to leave Italy and give up the trials.

I did not return to Toulon then, but went direct to Paris by way of Genoa, Turin, and the Mont Cenis Tunnel. The only things I remember about Genoa are the facts that I had to wait there two or three hours, that I was much struck with the natural beauty of the place, that I brought my wife a pretty sample of the Genoese jeweler's art, that while I sat at lunch in some restaurant a lady near me asked me what time it was, that

when the proprietor presented me with my bill it included a payment for that lady's lunch, and that I declined the honor of paying for it.

I had engaged and paid for a berth in a sleeping-car for my trip from Turin to Paris; but when I applied for my ticket half an hour before the train left, I was told that I could not have the berth, because an English gentleman had subsequently taken both berths in that compartment, although he needed only one. When I remonstrated, I was told that I could have my money back, but could n't have the berth. As I was due in Paris the next morning, I was confronted with the necessity of sitting up all night or else persuading the English gentleman to let me have my berth. I explained matters to him, and met with the reception that one often met with from Englishmen in those days when traveling. So I accepted the situation as good naturedly as I could.

On getting to my compartment just before the train started, I found it occupied by a powerfully built man, who greeted me very pleasantly, and with whom I soon entered into an interesting conversation. He was evidently an Irishman; in fact, he told me that he was a doctor who lived in Dublin, and that he had just taken a patient to the warm climate of the Riviera. We made the long trip through the tunnel pleasantly, and I soon declared him to myself to be such an extremely agreeable man that I was almost glad that I had lost my berth. As time went on, however, I gradually realized that, no matter what subject I talked about, he would soon get back to another subject, and that other subject was always the same. I could get him off that subject with little difficulty, but I could not keep him off. By the time it was nightfall I realized that I was to spend the night with a man who was almost a lunatic, if not wholly so, and I noted that he seemed to be gradually becoming excited. I was entirely unarmed, and we were alone in a compartment that was locked on the outside. I humored him, but at the same time kept a steady eye on him.

Finally, about ten o'clock, we made a stop somewhere, and an extremely unattractive and half-dirty man got into the compartment. I almost embraced him.

After spending a fortnight with my little family at the Hôtel Lafond in Paris, I went to London, arriving in the early days of April. The next morning after breakfast I recognized two unfortunate conditions, one that I had contracted a cold in the head and the other that it was a holiday. I was confronted with a gloomy day. Glancing about the room, I saw on a table a little book which had what seemed to me an extremely silly name, "Three Men in a Boat, to Say Nothing of the Dog." I opened its pages almost in disgust, but immediately saw something that made me laugh.

I did not stir from that room the rest of the day except to take two scanty meals, and despite gloomy weather and a cold, I spent one of the most mirthful days I can now recall.

During the time of my absence from England the British Admiralty had consented to try my range-finder, and Elliot Brothers had made arrangements to have it installed on board a small vessel of perhaps eight hundred tons, called the *Sea Gull*. So I went to Portsmouth, which is one of the great naval stations of England, and there I met a lot of naval officers at Whale Island. The contrast between the British officers and the French and Italian was noticeable. The British officers were evidently more energetic and hardy, but apparently less precise and thoughtful and also less polite.

They gave my range-finder some very common-sense trials, however, and the instrument did all that I had claimed for it. I was extremely disquieted, however, by the performance of another range-finder that was tried in competition with mine. It was an "optical" range-finder, which required only one observer, and was much simpler and cheaper than mine. It did not give so good results as mine, but it gave much better results than I had supposed possible, and I was enough of an optician and

mechanician to realize that it could be improved, and that possibly it might be improved to such a degree as to offset the superiority in accuracy and quickness which mine had thus far established over all others. As years went by, my unhappy expectation was fulfilled, not by that particular instrument, but by one considerably like it. The instrument tried in the *Sea Gull* was invented by a man named Mallock, a brother of William H. Mallock, who wrote "Is Life Worth Living?" The improvement was made by two young Scotch professors named Barr and Stroud, and it consisted mainly in forming a separate image on the focal plane of the rays of light coming from each object glass. The two images were separated by a vertical line instead of moving about together on the focal plane.

Shortly after arriving in London, I had called on Mr. Dredge, the editor of *Engineering*, and shown him pictures of my instruments and the official reports and tabulated results of my trials in the *Formidable* and the *Terrible*. He expressed himself as much interested, but he kept most of the conversation on the subject of flowers and their culture, which he said were the only really interesting things in the world to him.

In the course of our conversation I told him I had noticed that all the great cities in the world were in bad climates, and that regions where the climate was delightful were very sparsely populated; and I asked him why this was. He answered that the most beautiful flowers did not grow in good climates, but in bad climates, where it was necessary to give them special care in hothouses; and that human beings, similarly, could not become especially fine unless they lived in climates where they had to be treated in a way like hothouse flowers. Some time afterward I proposed the same question to the wardroom mess of the *Formidable*. No one seemed to have an answer ready, but finally the senior watch officer said, "*Il faut lutter.*" ("It is necessary to struggle.")

About two weeks after my conversation with Mr. Dredge, I was surprised to see in front of me in some window "FISKE'S RANGE-FINDER AND ELEVATION-INDICATOR," together with some excellent illustrations and diagrams. Looking a little more closely, I saw that they were printed on a page of *Engineering*, dated April 24, 1891, and that the descriptions and illustrations covered a page and a quarter of that very important and influential periodical. After full descriptions of the theory and construction of the range-finder and the "elevation-indicator" ("telescope sight"), *Engineering* quoted from the official reports of the *Formidable* and the *Terrible*. In the *Terrible* the base was only 58.9 meters long, and even with this short base the average error at 2000 meters was found to be only 2.6 per cent., or 52 yards; and at 3000 meters to be 3.9 per cent., or 117 meters, an accuracy sufficient for the naval gunnery of those days, and unequalled until then.

The elevation-indicator was described and illustrated, and the fact was pointed out that it could be mounted either on a gun-carriage or "on the conning-tower of the ship," and that it "substitutes for the uncertain line of the gun-sights the optical axis of an accurate telescope."

Despite the thorough publicity given to my elevation-indicator then, as well as formerly in publications more obscure, no one has ever disputed my title to the invention and development of the telescope sight not only as placed on a gun, but also as installed in a ship, so as to direct the fire of the whole battery. Yet one sees references occasionally to "Sir Percy Scott's gun-director System"!

On September 29, 1891, *The New York Times* published half a column account of it, with the head-lines:

"A New Naval Instrument.

"The *Yorktown* Equipping with Telescopic Gun-Directors."

The article was carefully written, and described cor-

rectly and clearly the construction and method of operation of the instrument. One paragraph read as follows:

The new device is the invention of Lieut. B. A. Fiske of the navy. Lieut. Fiske was the first imbued with the idea of fitting a single telescope sight in the conning tower; and, by suitable circuit arrangements, worked both at the gun and in the conning tower, firing from the latter position: In other words, it was proposed that the crew of each piece load its gun, give it the necessary lateral train, and angle of elevation, then close a circuit, and await the actual firing. This would be effected from the conning tower, by the closing of a second circuit, at the moment of target and cross hair intersection.

The article then stated that I recognized the fact that if that scheme were adopted, "the functions [of each gun crew] would become little better than those of coal heavers," and that "in consequence, Lieut. Fiske decided to fit his sight to each gun, and thus allow individual shooting to count." This did not state quite correctly my reason. My reason was that in those days ships were not constructed so accurately as now, and it would have been virtually impossible to know in the conning-tower what the elevations of the various guns were, because of the fact that the gun-tracks were not necessarily parallel to one another. I never abandoned the idea, but I had to wait for better ships.

At this time I received a telescope sight from New York and another range-finder. I had Elliot Brothers make some changes in the range-finder, and then I took both to Paris. Going across the channel, the weather was very sloppy. As we neared the French coast, I went forward near the bow. Seeing no one near, and feeling inspired by the sight ahead and the fresh breeze, I declaimed some lines from "Richelieu," ending "France, beloved France, who shall proclaim divorce 'twixt me and thee?" Unfortunately for my peace of mind, a feminine titter sounded in my ears just then, and I saw a young woman and a young man gazing at me with evident amusement from the shelter of a deck-house.

I ran up to Berlin from Paris not because I thought there was any chance of introducing my range-finder into the German Navy or because I cared very much about it, for at that time the German Navy was not seriously regarded. I thought I ought to go to Berlin before going to the United States, and I was glad afterward that I went. I was tremendously impressed with the orderliness and precision and cleanliness of everything. Efficiency was evident to the most casual glance. I did not see any large military forces, but those I did see impressed me as indicating a greater degree of precision and energy than I had noted in the soldiers in Paris.

On the way back, I occupied a compartment during the day with a man about my own age who read several books he had with him, some in Russian, some in German, and some in French. We conversed occasionally during the day in English, which he spoke as well as I. I do not know who he was, but the next morning, when we arrived in Paris, he was met by a handsome carriage, with men in livery, and a tall lady who was richly dressed.

After a short stay in Paris, I went again to Toulon. The tests made on board the *Formidable* had been declared by the board to be successful; but it was stipulated that, before the instrument could be accepted, the needle of the volt-meter would have to be made about twice as long and the scale twice as wide in order that the indications might be more easily read. The stipulation was a wise one in a way, but it was extremely difficult to carry out, because it entailed such changes in the volt-meter as might ruin it altogether unless they were very skilfully made. As I had only two volt-meters with me, and as they were of American pattern and of a kind that no one in France knew much about, I was extremely loath to make the attempt. I saw that I must do so, however, and so I borrowed from Savattier the most skilful workman he had, and promised to give the workman one hundred and fifty francs if he would make the change successfully.

The whole job of making the change did not take more than two hours, but when the anxiety was over, I felt as if I had done a hard day's work. The workman himself realized the danger of a careless or clumsy movement on his part, and evidently relaxed when his last touch had been given; for when I handed him his hundred and fifty francs, he stretched out a trembling hand to receive it.

Shortly after reaching Paris on my first visit, I had called at the office of the Artillerie de Terre to arrange for a trial of my range-finder in a fort. The officers there were extremely courteous and evidently interested. The one whom I remember the best is Captain G. Moch, who later wrote an article for the *Revue d'Artillerie* on my system of range-finding and gun-pointing. My first visit to this office was only a few days after I had landed in Paris, and I remember my feelings when I was suddenly confronted with the necessity of talking French to a dozen men at the same time. They were so extremely polite, however, and gave me such grave assurances as to the beauty of my French, that I was encouraged to go ahead. I know that I must have made a great many mistakes, but no sign of this fact did any of them betray.

So, at Toulon, after putting the range-finder back on board the *Formidable* for the additional trial needed, to see if the changes demanded by the board had been satisfactorily made, Savattier and I got to work on the other, to get it ready to be installed in a fort at Cap Brun. While we were getting it ready, one of the officers of the fort came to make a preliminary examination of it. He conducted the proceedings with a great deal of solemnity and went into every detail. After he left, Savattier said to me in a perfectly matter-of-fact way, "Il est presque idiot." ("He is almost an idiot.")

It did not take Savattier and me a long time to get the range-finder ready, and for the army officers there to have it transported to Cap Brun. There the instruments were installed in two positions somewhat more than a

hundred yards apart, thus giving a long base-line. In many ways the conditions were ideal for accurate range-finding as compared with the conditions on board ship, because of the steady platform, the long base, and the great clearness of the air which usually prevailed. In one way the conditions were more difficult, and that was that the great changes of temperature caused by a bright sun in the day-time and great radiation in the night-time, which always prevail in a clear atmosphere, caused considerable changes in the resistances of the electrical circuit.

Anticipating this, I had made the wires connecting the two instruments very large, and had covered them with lead, so that they could be buried in the earth. On the first trial we found the change in resistance so great as seriously to affect the accuracy of the instrument; but by burying the wires deeply, and then more deeply still, we managed to overcome the trouble.

The officers of the *Artillerie de Terre* were much interested in this instrument, because of the simplicity of the apparatus and the extreme quickness—almost instantaneousness—with which it gave indications of distances and angles. The officer who took the most interest was a Captain Fabre, who belonged in the central office in Paris. He came from Paris to Toulon to take direct charge of the experiments, and to be the head of the board which reported the results achieved. When the experiments were finished, the officers did not attempt to hide from me the gratification which they felt, and the future which they thought they foresaw.

I took with me from London to Toulon the elevation-indicator, which I called a "telescopic sight," and which the French called "*hausse telescopique*." I took it on board the *Formidable*, and explained it to the officers; but while they were quite polite, I could see that they did not regard it favorably. Some of them seemed to regard it as too scientific, and others as not scientific enough. This latter class had become much impressed

with an experiment which had been recently made on board a French battle-ship, in which a lens of great focal length had been so placed on a gun that the rays of light from a distant target and from the gun-sights were so concentrated by the lens on a screen that the two images were seen together, the turret being made completely dark. On one occasion the captain's little daughter was told to press an electric key, which the gunnery officer put into her hand, just as soon as she saw the image of the gun-sight on the screen meet the picture of the target. She did so, and the shell hit the target. I must admit that this French scheme alarmed me considerably, though I did not think it as good as mine. Mine was ultimately declared to be the better.

Before leaving New York I had invented a plan for signaling ranges from the range-finder to the guns. My plan was to produce a complete gunnery system whereby I could measure the ranges with a range-finder, telegraph the ranges to the guns with a range-indicator, and utilize the ranges for hitting the target by an absolutely accurate telescope sight. Naturally, I talked about this system to all the officers I met, though I did not have with me any range-indicator apparatus for the reason that I had not yet constructed any. In the light of subsequent events I remember with interest the fact that the idea which pleased them most was the range-indicator, and the idea that pleased them least was the telescope sight. I do not think there was a single officer to whom I spoke about the telescope sight who showed the slightest respect for it. The British officers did not seem enough interested in the idea even to consider it, while the French and Italian officers thought it very interesting, but unpractical. The idea of attaching a telescope to a big gun and firing the gun with the telescope on it seemed preposterous. I knew that it was an old idea to use a telescope for pointing a gun in a fort, but that the telescope was pulled off the gun smartly just before the

gun was fired. Of course, while such a scheme might work fairly well in connection with a fixed gun on land, it could not be successfully used on board a rolling ship.

In the latter part of August the range-finder on board the *Formidable* and the range-finder at Cap Brun were declared to be successes, and both instruments were accepted by the French Government. So I returned to Paris believing that I had made the most important invention in gunnery appliances, for use on both land and sea, that had been made for many years. In fact, I was told so by many people. This belief was strengthened when I reached Paris by receiving several copies of a pamphlet of thirty-six pages, issued by the *Revue d'Artillerie*, with the title "Appareils Télémétriques et de Pointage, Système Fiske, Par G. Moch, Capitaine D'Artillerie." Captain Moch's pamphlet went into the subject very carefully, mainly from the point of view of an army officer, but largely from the point of view of naval gunnery as well as army gunnery. His conclusions were highly favorable.

The translation of one of the sentences at the end of his pamphlet is, "We believe that the principle common to all the apparatus which we have described is able to be generalized, and to supply a great help to all the sciences which rest upon measurements of precision."

This pamphlet was followed shortly afterward by a similar, but more extensive, one, written by an Italian named Santarelli, who had been a civilian member of the board that had tried my range-finder in the *Terribile*.

Naturally I came to feel that I had made an invention which was not only of value in gunnery, but capable of application to many other arts. This belief I still hold, and it is a matter of great regret to me that I had to give up developing it. It must be understood that, if a man gives up an invention before he has brought it to perfection, the invention soon becomes discredited, and further progress with it by others is virtually stopped,

because other men look on it as something which has proved to be unpractical, and which therefore should be avoided.

My wife and I, with our little daughter Carrie, went to Havre by train, arriving there the night before sailing. The hotel seemed a rather gay place for a respectable family, and I was not pleased to see in one of the rooms on the ground floor a gambling machine called *les chevaux* (the horses), in which one bet on certain mechanical horses that ran around a ring. On retiring that evening I spoke of the gambling-machine to my wife, and she said, "Yes, Carrie won ten francs."

We had a stormy voyage to New York, and a fire on board besides. In the old *Normandie*, as in the French fleet, I looked in vain for those signs of inefficiency and intense excitability that I had heard so much about as characteristic of the French in emergencies at sea.

CHAPTER XII

CRUISING IN THE ATLANTIC AND PACIFIC OCEANS AND THE BERING SEA

TWO or three days after our return to New York I went on board the *Yorktown*, then alongside the dock at the navy-yard in Brooklyn to see what results had been achieved with the telescope sight at target practice. I knew the telescope sight had been attached to the carriage of the forward six-inch gun on the starboard side, but I had not been able to learn what results had been attained. Commander F. E. Chadwick had been the captain when the sight had been installed about a year before; Commander Robley D. Evans had recently taken his place.

I went into the cabin, and was politely received by the captain, who offered me a cigar. To my surprise, he did not tell me about the telescope sight, and when I finally broached the subject, he told me he had never heard of it. I then told him what it was, and that it had been attached to one of the guns in his ship. He seemed to be extremely surprised, and at once sent for Lieutenant Bradbury, the ordnance officer.

When Bradbury came into the cabin, and the captain asked him if he knew anything about the telescope sight, he seemed nonplussed for a while; but finally he said that he thought it was on board somewhere, perhaps in the ordnance storeroom. The captain told him to please find out. Bradbury left the cabin, and returned in about fifteen minutes with a gunner's mate, who had the telescope sight in his arms. The captain seemed interested, and said he would like me to come on board some day and show them how to attach it to the gun; in which case, he

said, he would have the navy-yard workmen secure it there. I told him that had all been done, and that I could put the instrument in place in two minutes. So we went forward to the forecastle, where the gun was, and I secured the telescope sight in place. I then explained to them how it was to operate, and how simple it was. I could see that they both understood how to use it, but that they did not regard it seriously.

As my leave was now finished, I foresaw that I should soon have to decide whether to resign from the navy and devote myself to the development of my inventions, or return to the navy and enter again the comparatively uninteresting, but more secure, career of the naval officer. It was now the beginning of October, 1891, and I was just thirty-seven years old. The new navy was progressing; but the people of the United States did not regard it very seriously, and there were no indications whatever that a man of my age and rank could have any sort of career. My age was such, in comparison with that of officers near me in rank, that I knew I must eventually become a rear-admiral, the highest rank then held; but I knew also that I would not obtain this rank, according to the prospects then existing, until a very short time before I retired at the age of sixty-two. I made as accurate a calculation as I could, based on the theory of probabilities, and concluded that I would remain a lieutenant until about the age of fifty, be a lieutenant-commander from the age of fifty to fifty-nine, be a commander from the age of fifty-nine to sixty-one, and go through the grades of captain and rear-admiral and retire in my sixty-second year.

This was not a very exciting prospect; but I thought that, on account of my inventions and the really unprecedented experiences I had had in Europe, I would probably be given such duties, both on shore and afloat, that my inventive ability and scientific attainments, especially in electricity, would be utilized in developing and perfecting the ordnance and gunnery equip-

ments of the new navy. In other words, it seemed to me that, although I might never attain any special success as a naval officer, I might nevertheless live the kind of life that every man likes to live; that is, the life in which he feels that he is doing the best he can with the one or five or ten talents committed to his keeping. I realized, however, that this might be merely a dream, and that the sentiment of the navy at that time, and especially the sentiment in the Bureau of Navigation, of which the chief was Commodore Ramsay, was that all naval officers were the same except in the matter of rank. I knew that Commodore Ramsay was enforcing the practice of absolute rotation in office both at sea and on shore, and that the individual characteristics of officers had little influence in deciding the duties to which he assigned them. One day he told me that, in the matter of inventing, officers were all the same; and he stated, as proof of this, that on one occasion, when he had been commandant of the torpedo station, he had given out the problem of designing a mechanism to accomplish a certain purpose, and that the solutions of the twelve officers in the class had been virtually identical. The distinction between the inventor and the designing engineer is still foggy in the minds of many people.

Two days after my visit to the *Yorktown* I received orders to report for duty on board that vessel two days later; that is, on October 6. I knew that she was to sail for the Pacific, and so I had to do considerable hurrying to get all my affairs arranged, especially with the range-finder company. The company wanted me to resign, but was unable to offer me any adequate guaranty for the future. I think I would have resigned, and taken the chances, if my friends had not all advised me otherwise and if my health had been more assured. As matters were as they were, I made up my mind not to resign, and so I reported on board the *Yorktown* in due season. Two days later we steamed out to sea, bound for the West Indian island of St. Thomas, then a posses-

sion of Denmark, but now a possession of the United States.

I found life on board the *Yorktown* a change from the life that I had been living for a year. There were thirteen of us in the mess: the executive officer, the navigator, five watch officers, of whom I was the second, a chief engineer, two assistant engineers, a doctor, a paymaster and a paymaster's clerk. We had our messroom on the gun-deck, and our rooms on the berth-deck, in the wardroom proper. There were six rooms on each side, mine being the third from forward on the starboard side. My room was comfortable in its way, not being too large and not encumbered with a bureau. My bureau stood in the wardroom "country" outside my door. I could lie in my bunk and reach out from it and draw my curtain without inconvenience.

We had a rough trip down, during which time I had considerable leisure in which to plan what I should do, but almost nothing to do. The twenty-four hours' duty of each day were divided among the five watch officers, so that each of us stood watch on deck for four and four-fifths hours per day. Unless the weather was bad, we had some kind of drill from half past nine to ten in the forenoon, and sometimes setting-up exercises about five in the afternoon. As the ship was rarely under sail, and as the engines did the work of pushing the ship along, there was not much for an officer of the watch to do except to walk back and forth across the bridge. In port he walked back and forth on the quarter-deck instead of on the bridge. As all the drills were of a simple character, and as I had learned them in previous cruises, I did not find them very laborious or exciting.

We spent two days in St. Thomas, just enough to lay in a supply of coal. It was interesting to me to recall the fact that I had invented my range-finder there four years before, to recollect how much had passed in my humble life since then, and to realize that I was starting out on another cruise in a ship much less interesting

and important than the *Atlanta*; so that professionally I seemed to have gone backward instead of forward in the intervening years.

A hot trip took us to Bahia, in Brazil, about which the most interesting thing seemed to be the continuous prevalence of yellow fever. We coaled as rapidly as we could, and then started for Montevideo, in Uruguay. One night I was to have the mid-watch, which lasts from midnight to four A. M. In anticipation of this, I turned in early, and as the night was warm and the sea was smooth, I left open my air-port, a small round window just abreast the top of my bunk, following a practice which was usual with us in calm weather. Unfortunately, a sudden change in the weather took place, consisting mainly of a violent squall which "picked up" the sea, and carried away some of our sails. I did not know anything about this until I was suddenly awakened by a cold sea coming into my air-port, and almost washing me out of my bunk.

We coaled in Montevideo, replaced the sails that had been carried away in the squall, and started south for the Strait of Magellan. We were bound for Valparaiso, in Chile, to report to Captain Schley, then in command of the *Baltimore*, some of whose sailors had been attacked by a mob in the streets, and one of whom had been killed.

We anchored off the eastern entrance to the Strait of Magellan one evening, preparatory to entering the next morning. This was in the early half of December; and as December is a summer month in the Southern Hemisphere, and we were in latitude of 52 S., we had fair daylight until almost midnight.

The next morning we got under way early, and steamed among rocks and mountains and glaciers, part of the time in snow-storms, part in brilliant sunshine, over smooth, deep waters, and through winding channels. That night we anchored at Punta Arenas, which the English call Sandy Point, one name being a translation of

the other. The next day we steamed through localities like those we had steamed through the day before, and just as the sun was setting, we pushed out into the immense Pacific. Then the bow of the little *Yorktown* began to rise and fall in great sweeps as she met the enormous waves which, as every seaman knows, unceasingly roll near Cape Pillar.

We did not have enough coal to take us to Valparaiso with much to spare. So, as we did not know what conditions we should have to meet there, the captain decided to stop at the port of Lota and get coal, Lota being at the southern extremity of Chile. A day's trip from Lota took us to Valparaiso, and in that beautiful bay we anchored in the middle of one afternoon just before Christmas. Looking around us, we saw a bay approximately circular, holding many ships, of which two were Chilean battle-ships; and surrounding the bay we saw high mountains, some near and some far. To the eastward, at the foot of the mountains, perhaps a mile from us, lay the city, looking bright, many-colored, irregular and picturesque.

We anchored near the *Baltimore*, and that evening Commander Evans of the *Yorktown* dined with Captain Schley aboard the *Baltimore*. Six years and a half later both officers took part in the Battle of Santiago.

Conditions in Valparaiso were exceedingly disturbed, a revolution being in progress against President Balmaceda, and the navy taking the part of the revolutionists. Feeling against the United States was exceedingly bitter, due to a number of causes. As usual in such cases, the real causes of trouble had occurred several years before. It seemed to us that the American minister, Mr. Patrick Egan, had not shown very much foresight before the revolution began, and that he had committed the United States to an unfortunate policy because of it. I think I am right in saying that during my career on the active list, it was the opinion of most naval officers that our ministers in foreign countries did not serve

their Government with as much skill, or show as much foresight and understanding about the people of the countries to which they were accredited, as did the ministers of the European countries. In fact, the lack of skill and knowledge which our ministers and consuls displayed was a source of amazement to most of us until we became accustomed to it.

We had been sent to Valparaiso to take the place of the *Baltimore*, and she left shortly after we arrived. Before she left, I went on board and examined my range-finder, and asked the officers how it had behaved itself. To my delight, I found that it was still in good order, that it had been behaving itself commendably, and that about two months before on the conclusion of the year's test, the board had sent in a favorable report, which had been approved by the captain.

The report was very complete, and described carefully the way in which the instrument was installed, and the tests which had been held with it both at sea and in port. One paragraph in the report read,

On January 14th last, the range finder was used at target practice off the harbor of Villefranche, France. There was a gentle breeze, and the ship was rolling slightly. The range of the target varied from 1400 to 850 yards, and the sight bars were set for the ranges given. A few ranges were taken by Buckner's method from the top, which agreed closely to those given by the range finder. The instrument seemed to give correct results, as the plotted shots were evenly distributed above and below the water-line of the target. Two targets were shot away; and afterwards the planks and barrels floating in the water were repeatedly struck by shells from the secondary battery.

In Captain Schley's endorsement were the following sentences:

From my observations with the instrument on board this vessel, I am convinced that it is an indispensable part of the ordnance outfit of all our news ships. . . . During the cruise in all target practices, this instrument has been found of the greatest value

in accurately determining distances. . . . The experience of this ship with the instrument shows further that the ships, in contests of the future, supplied with the Fiske range finder, would possess an enormous advantage over those in which the distance had to be determined in the old way.

We remained in Valparaiso till about the first of February. The Chileans were so hostile to us that the enlisted men were not allowed ashore at all, and the officers were allowed ashore only in the afternoon. The Chilean naval officers, however, were extremely polite to me individually on account of my range-finder, which they had heard about, and which they knew was to be installed in their new battle-ship *Captain Prat*, then building at La Seyne, in France. In fact, on almost the day that we arrived the Chilean naval magazine, called *Revista de Marina*, published an illustrated description of "El Telémetro Fiske," translated from the Italian.

The weather was magnificent, day after day of bright sunshine and clear, cool, bracing air. Finally, after suitable arrangements had been made between the American minister and Captain Evans, the *asilados* who had been members of the Balmaceda cabinet, and who had been given asylum at the American Legation, were brought down from Santiago, the capital, by night, and brought in a boat to the *Yorktown*. The assumption was that this was done without the knowledge of the Chilean Government.

A two days' trip took us to Callao, the seaport of Peru, about five miles distant from Lima, its capital. On the morning of the second day from Valparaiso we found ourselves in a dense fog. The *asilados* had seemed to us to be a little suspicious as to the place to which they were to be taken, and we could hardly blame them; for they were wholly in our power, and they had no real knowledge as to our relations with the Chilean Government. In the forenoon of the second day they were specially restless; but finally when the fog lifted a little, and the lighthouse of Callao suddenly appeared, they

exclaimed, "El pharo! El pharo!" and danced about the deck with joy.

Callao was not very interesting, but Lima was, at least for a while. Although Lima is only twelve degrees south of the equator, and although the interior of Peru near by is intensely hot, the climate of this locality is, in a sense, delightful. This is because a cold current from the south flows near the coast of Peru on its way north, and cools the climate remarkably. I remember standing on the deck of the *Yorktown* one day at noon, when the sun was so nearly vertically above me that I could not see my shadow on deck; and yet I was very comfortable, though I was dressed in blue uniform and wore a blue cap. The sun rises at six o'clock every morning and sets at six every evening, or within a few minutes either side of six; the wind never blows hard; the weather is never hot; the weather is never cold; and it almost never rains. If a man is rich, he is apt to own an umbrella and a light overcoat, but these are largely for display. The absence of rain, however, is compensated by a continuous dampness in the air, which in Callao frequently becomes a fog. The result is that one day in Lima is almost exactly like every other day. The sunshine is never bright, but it is seldom hidden altogether; so that a continuous light haze pervades Lima all the while in daytime, and gives a soft effect to a landscape, which is therefore never brilliant but never gloomy. I have been in Lima several times since, and on the way there I have always predicted to my companion what would be the general appearance of the plaza when we reached it, and my predictions have always been verified.

Shortly after joining the wardroom mess, some one, by reason of my recent sojourn in France, dubbed me Algernon de Montmorenci, a name which soon became Algy, and by which I was known in the mess during the rest of the cruise. The telescope sight was known as "Algy's sight," and it was an object of good-natured

and kindly disregard. The subject was rarely mentioned except in good-natured bantering; but one day at the midday meal an argument arose, which brought out the fact that every member of the mess regarded the sight as not only unpractical, but incorrect in principle. I was not able to make a single man in the mess admit the correctness of the theory upon which I had constructed it, and I went down to my room with a horrible suspicion in my mind, a doubt of my own sanity. I said to myself that, if I had held persistently to a certain theory on a demonstrable subject for a year and a half, and that theory was wrong, I must be crazy.

Just then I remembered that there was an officer on board the U. S. S. *Boston*, anchored near us, who had had some experience in ordnance, and I determined to go at once and call on him, and see if I could not bring him to my point of view, resolving that if he declared that I was wrong, I would then believe so. This officer was Lieutenant Albert Gleaves, now a vice-admiral.

So I got a boat and went on board the *Boston*. I discovered Gleaves half asleep in his bunk, having had a watch the night before. I found him very good natured and perfectly willing to talk about the telescope sight, though he frankly told me that he thought that I was wrong.

After some discussion and drawing of diagrams, we went up to the six-inch gun on the port side of the gun-deck aft. Here I labored with Gleaves for a long while without success; but finally he drew back and said almost under his breath and very gravely indeed:

“By God! Jim, I believe you ’re right.”

We remained at Callao for about ten days, and then started north for San Francisco. Shortly after leaving Callao, the ship held her regular target practice. After this target practice was over, but before the battery was secured, I asked permission of the captain to try the telescope sight, knowing that he had orders from the

Bureau of Ordnance to try it. The captain seemed considerably irritated, but he gave permission saying:

"All right; but hurry up about it."

The telescope sight was fitted to a gun in my division, but it was not just then in place. So I sent the gunner's mate to get it, and in a few minutes I had it secured in position. Then the gun captain fired four shots at the target. To my horror, they all went about four hundred yards short! I tried to explain to the captain that, since they all went to the same spot, the sight must be all right, but that I must have failed to get the zero adjustment right; and I pointed out that to get this adjustment right was an extremely difficult thing to accomplish at sea, with a vessel that rolled as much as the *Yorktown*. I could not make him see the matter as I did, however; but yielding somewhat to my insistence, he called out, "Mr. X——, look through that telescopic sight and tell me what you think about it." X—— went to the telescope and had the gun moved about while he looked through the telescope. Then he turned to the captain, saluted, and said:

"I think it increases the difficulty of sighting, sir."

So I went down to my room with a feeling of discouragement so intense that I needed to remind myself continually that Folger and Gleaves were on my side.

This story may seem queer to officers now who are familiar with "bore-sighting," but the fact is that all the officers of the *Yorktown* agreed with the captain. Shortly afterward, the captain sent in the following report:

U. S. S. *Yorktown*, 3d Rate,

Navy Yard, Mare Island, March 31, 1892.

The Honorable Secretary of the Navy, Washington, D. C.

Sir:—I have the honor to report, that during the target practice, for this quarter, I tested the Fiske telescopic sight under the personal supervision of the inventor.

The sight was fitted to the forward 6-inch B. L. R. and the gun

captains, who had been doing excellent shooting, with the ordinary sights, were required to use it. The shooting immediately became so bad that the use of the sight was discontinued, the inventor admitting that something was radically wrong with it.

Afterwards, I required the executive officer to observe the target through the Fiske sight, when the gun was fired with the ordinary sights. He reported that the target was not anywhere near the cross wires when the gun was fired; yet the shot was an excellent one. He was cut over the eye by the recoil of the sight. The shots fired with this sight are marked on the returns.

In its present shape it is of no value on board ship.

Very respectfully,

Your obedient servant,

ROBLEY D. EVANS,

Commander Commanding.

On reaching San Francisco Bay, we went directly to the navy-yard, which is about forty miles from San Francisco. Hardly had we reached the navy-yard when we received orders to prepare with all possible despatch to go to the Bering Sea. After our long trip from New York, we had been looking forward with great pleasure to reaching the yard; but in one day after arriving the conditions at the yard became more uncomfortable than at sea. Navy-yard workmen came on board in large numbers, and ripped up decks, and drove rivets, and hammered oakum into the seams, at a rate which was extremely trying to the temper and the ears; and we could not get away from the ship on leave, because our presence was required on board, to see that the repairs were done correctly, each watch officer being responsible for a certain part of the ship.

Finally we got away, and a pleasant, but somewhat rough, trip took us to the Straits of San Juan de Fuca, at the northwestern corner of the United States. A delightful and exhilarating passage through those straits, between tremendous pine-forests, backed with tremendous mountains on both sides, took us to Port Townsend, in the State of Washington. Here we laid in coal to

take us to Unalaska, one of the islands of the Aleutian chain, which form the southern boundary of the Bering Sea. Port Townsend was one of the too-much-boomed Western towns. It had had a brief period of inflated prosperity; but now the inhabitants, despite some new fine buildings on the streets, were gloomy and discouraged.

A trip of a few days brought us to Unalaska, which presented to our view on the morning of the first of May a rough and forbidding picture of low, but rugged, mountains, sharp peaks, and a few houses along a sandy beach, the whole still covered with the winter's snow.

We had been sent to the Bering Sea to take part in a concerted effort made by several nations to prevent the wholesale destruction of seals. We learned that the seals congregated on the "rookeries" on the Pribyloff Islands, in the middle of the Bering Sea, in the summer-time; that they left about the first of October, the females going south and the males going to unknown parts; and that about the first of the following May the females reappeared, coming with their young from the South, while the males reappeared at the same time, coming from no one knew where.

The *Yorktown* was the flag-ship of a little fleet, of I think, six vessels, of which three were naval vessels and three were revenue-cutters.

During the five months that we were in the Bering Sea each vessel spent about half the time in port and half the time at sea. Life at sea was not very luxurious, because the weather consisted for the most part of gales and fogs; and sometimes a gale and fog co-existed. We steamed back and forth across the Bering Sea, but we rarely found any sealers, largely because there were very few sealers to be found. One day we had a gale that I shall always remember from the fact that everybody on board was seasick. It was then ten months since we had left New York, and we had enough rough weather to have become accustomed to it; but there was something

so particularly disturbing about this gale that even sailors who had been going to sea since boyhood, and who had never had any other occupation in their lives, were seasick.

We would usually go to sea for a week, and then lie in port for a week. The port of Unalaska did not offer any bewildering attractions, but we always left it with regret and returned to it with pleasure. During a week's trip, we watch officers would walk up and down the bridge for four hours, and look at as much water as we could see through the fog and very frequently the rain. When we came off watch, we would sit in the mess-room or lie down in our bunks. One afternoon, after I had been lying in my bunk, I got up from it about a quarter before four to go on watch. I looked across the wardroom, and saw the surgeon, a big man, standing in his room, holding on to the right and left sides of his bureau, so as to steady himself in the violent rolling of the ship, sobbing audibly, with tears running down both cheeks, which he could not wipe off, because he was using both his hands to hold on to the bureau. Wondering what could have happened to him, I went over to his room and sympathetically inquired. The surgeon told me as best he could, his voice being choked by sobs and tears, that he was reading Loti's "Pêcheur d'Islande."

I can see him now in his little room, with the sunshine from the low western sun streaming into the round port-hole of his room at intervals as the *Yorktown* rolled, and illuminating a man whose body was in the Bering Sea, but whose mind was with a bereaved and desolate girl in France.

One evening, about nine o'clock, while I was officer of the deck, and the ship was driving along in a dense fog and a howling gale of wind, and rolling violently, I was suddenly startled by a prolonged screech from the siren. This was the collision signal, which called everybody on deck except those stationed to take care of the engines and close the water-tight doors below. As a col-

lision in those circumstances would have been a disastrous occurrence, officers and men came on deck and went to their stations with alacrity. My alarm was only momentary, because I realized at once that, if the signal had been given because of an impending collision, I would have been the one to give it; and I concluded that the captain or the executive officer must have had the signal given, for some reason, without my knowledge. But it struck me as curious that the screeching continued. Soon the captain's orderly came running up, and asked me what was the matter. I told him to tell the captain that I did not know, but that I would find out. It was intensely dark; but by the light of some lanterns, brought into use near the siren, I found that a large block, or pulley, had been jerked by the violent rolling of the ship off the wire on which it usually hung, and that in falling its hook had fallen over the line which ran from the siren over to the bridge.

One day we went to the Pribyloff Islands to see the seal rookeries, having on board a Mr. Stanley Brown, who had come from Washington to go up to them in the *Yorktown*. If anybody wants to live in the Pribyloff Islands, his tastes are different from those of the officers of the *Yorktown*. The seal rookeries, however, were intensely interesting. Lying on our bellies on a cliff, we could look along a low, sandy beach for miles, the beach extending inward from the seashore a few hundred yards. Over this long and narrow stretch were congregated tens of thousands of seals. They were divided into families evidently, each family having its own yard or space. I do not remember any visible divisions in the way of walls or ditches that separated one space from another, but they were understood, nevertheless. Even the most superficial survey showed that; and it also showed fights going on from time to time as a male or a female would go across a division into another family. It was noticeable that there was a good deal of this visiting and consequent fighting going on; and it was also noticeable

that the seals kissed one another. Previous to this, we had supposed that human beings were the only animals that kissed one another. Another noticeable fact was the great difference in size and appearance between the males and females. Among most animals, there is a strong resemblance between the two sexes; but the male seal is not only much larger than the female, but of very different shape.

The port of Unalaska was situated on an island of the same name, and the houses of the town were at that time located on one street that ran along the beach. The front door of the house was at the back; that is, on the side opposite from the street. The reason for this was that this arrangement gave better protection inside the houses from the strong gales that blew from the sea. At the time of our visit there were said to be about three hundred white people there, Russians, French, English, Jews, Germans, and Americans. The seal industry, most of which was in charge of the Alaska Fur Trading Company, was the reason for the white people being there.

One evening they gave us a ball in a room that was too small for the company collected, and which was lighted by oil-lamps. I remember how hot it was and how hot it smelt. We all danced, of course, including our executive officer, Lieutenant Duncan Kennedy, a man about forty-four years old, handsome, and a good dancer. He told us the next day at lunch that he had received the night before his first intimation that he was getting old by a remark from a lady with whom he had danced: "Some of these stout elderly gentlemen are very light on their feet."

On the twenty-second of September, 1892, while near Unalaska, the *Yorktown* held her semiannual target practice, six months after the target practice in which my telescope sight had been tried with such unsatisfactory results. After that target practice, and knowing that the captain had sent in an unfavorable report, I had written an official letter to the chief of Bureau of Ordnance, Com-



Courtesy of Harper & Bros.

GUN PRACTICE ON BOARD A MAN-O'-WAR
Before the introduction of the telescope sight

mander Folger, saying that I was very sure that the bad results had been entirely due to my putting the instrument incorrectly in place when in a hurry, and asking an allowance of ten more shots and a further trial. I received a favorable reply, and the captain received an order to try the sight again.

So on the afternoon of September 22, 1892, after the usual target practice, I obtained permission to fire five shots, using the telescope sight.

It had not been altered in any respect whatever since it had been tried in the preceding spring.

In the forenoon eighteen shots had been fired, using the regular open sights then used in all navies, six shots from each of the three guns on the starboard side. The results obtained were such as were usually obtained in such circumstances. We had a method then by which the spot where each shot fell could be plotted and recorded, and shown afterward on a printed form issued by the Bureau of Ordnance.

My trial was to come after the midday dinner. Of course I was intensely excited. No one else was. The captain went ashore, and none of the officers came on deck to see what would happen. The enlisted men did, however, and it seemed to me that they felt sympathetic. My first shot seemed to go right through the target, near the bottom; my second to go through it near the top; and the third to hit it at the bottom. The fourth shot brought the target down in a heap. When this thing happened, three spontaneous cheers from the men brought all the officers on deck. Then I fired the fifth shot at the wreck.

When my shots were plotted, it was seen that only one shot, and that the last one, was as far away as ten feet from the center of the target. My shots, as compared with the eighteen shots fired with the open sights, were so much better that there was absolutely no way of comparing them, because they were not in the same class. As I went down to my room and closed the curtain I repeated to myself what Folger had said to me, "You have

changed naval gunnery from a game of chance into a science"; and *I realized that I had made and developed an invention the results of which would extend all over the world and reach far into the future.*

Surprise has been expressed that the accuracy was so great; but there is no reason whatever why the accuracy should not have been so great, and there are two conclusive reasons why it should have been:

(1) The telescope sight in the *Yorktown* was as accurate and reliable as any that have been made since.

(2) I was careful not to fire except when the cross wires rested on the center of the target.

A few days later, moving target practice was held. Nine shots were fired using the open sights, and the tenth shot was fired using the telescope sight.

I then made the following report to the Bureau of Ordnance:

U. S. S. *Yorktown*,

Unalaska, Alaska, September 29, 1892.

Commander William M. Folger, U. S. Navy, Chief of Bureau of Ordnance.

Sir:—Referring to the allowance of ten rounds of 6" ammunition, kindly made me by the bureau, I beg to state that I have been able to fire six of these; five at stationary practice and one at moving practice. The telescope was mounted on the shield, and I used electric primers.

I send herewith diagrams showing the results.

At the stationary practice, shot No. 22 carried away the target, and shot No. 23 was fired at the wreck.

At the moving practice shot No. 7, fired using the ordinary gun sights, carried away the target, and shot No. 10, using the telescope sight, was fired at the wreck. As nearly as could be determined, this shot would have struck the target, had the target been there, on the left side $2\frac{1}{2}$ feet above the water-line. After firing this shot I remarked to the commanding officer that the wreck was hard to see, and he discontinued the practice; the weather was now becoming bad.

I found no difficulty in directing the gun on the target, at either stationary or moving practice, using the telescope sight.

I found that any change in setting, necessitated by a change in range, can be more quickly and safely made than with the ordinary sights, where a man has to step up to the breech of the gun. At the recent practice, a man who had adjusted one of the ordinary sights was hurt, because the gun was fired before he had gotten clear of the breech.

I found no inconvenience arising from the proximity of the eye to the eye piece of the telescope at the instant of discharge; but as a matter of precaution, I held the eye piece by the thumb and forefinger of my left hand, and rested my eye against my thumb and forefinger, instead of directly against the eye piece. I found no inconvenience in thus holding the telescope.

Targets are frequently struck, when the ordinary sights are used; of course, this kind of shots could not be improved by using the telescopic sight or any other kind. It would seem, however, that this sight ought to stop wild shooting altogether; because the cross wires show the gun captain exactly how the gun points, and also magnify by 4 the distance by which the gun is off the target at any instant. This sight seems to eliminate those errors of naval gunnery that are due to inaccurate sighting; if a man can see through a telescope at all, the construction of the telescope forces him to look along the axis of collimation, even if his eye is not accurately placed. That this is not the case with the ordinary sights, where a man must keep the pupil of his eye exactly on the line running between the front and rear sights, need not be pointed out.

Almost as important as the question of accurate sighting is the question of rapid and convenient sighting; and it is apparent that, if the field of view of the telescopic sight were small, it would be worthless on a moving platform, because it would be nearly impossible to keep the target in the field of view, and therefore nearly impossible to direct the gun on the target.

It was found possible, however, by Stackpole, the instrument maker, to construct this telescope with a magnification of 4 (which is enough) and a field of 8 degrees. This takes in 504 feet at 1200 yards, 840 feet at 2000 yards, 1008 feet at 2400 yards, etc. It will be seen that this field is ample, being in fact considerably larger than the field obtained using the ordinary sights, and looking through the ports in the gun shield. To a man standing 60 inches behind the rear sight, the total field is $9\frac{1}{2}$ degrees horizontally and 3 degrees vertically. On page 8

180 FROM MIDSHIPMAN TO REAR-ADMIRAL

are shown two diagrams, drawn to scale: one diagram shows how a ship looks when viewed over the ordinary sight, the other how it looks through the telescopic sight. In each case, the ship is supposed to be 2000 yards distant, to be 300 feet long and to have masts 150 feet high, above the water.

With the ordinary sights, accurate shooting on the down roll is difficult, unless the sea is smooth; because, owing to the small field below the line of sight, the target cannot be seen at all until it is almost "on"; and it comes "on" very suddenly. With the telescopic sight, the fact that there is a field of 4° below the cross wires, as well as above, makes it as easy and accurate to fire on the down roll as on the up roll.

By making one trunnion hollow, and placing a little lamp near it, to illuminate the cross wires, as is done with some surveying instruments, a night sight is obtained more simple than those now in use.

Should any accident befall the telescope, the ordinary sights can still be used, as at present; the telescope does not in any way interfere with the ordinary sights.

Very respectfully,

B. A. FISKE,
Lieutenant, U. S. N.

To this report the following answer was received:

Bureau of Ordnance, October 19, 1892.

Lieut. B. A. Fiske, U.S.N., Mare Island Navy Yard, Mare Island, Cal.

Sir:—Your report of the experimental test of the telescopic sight has been received, and the results obtained are sufficiently promising to justify further trial.

The Bureau, therefore, requests that you furnish it with a description of the sight and its attachments, and of the method of using it; also with the information as to through whom two sets of these sights may be purchased for trial on some vessel at this station.

Respectfully,

WM. M. FOLGER,
Chief of Bureau.

I answered this letter, giving the information requested.

Up to this time in our navy guns larger than six-pounders had not been fitted to recoil in the line of fire; but I knew that they would be after a while. So, as soon as I had demonstrated the applicability of my invention to guns that did not recoil in the line of fire, I set about the much easier task of demonstrating its applicability to guns that did recoil in the line of fire.

About the first of November, 1892, the late Rear-Admiral Frank Wildes, then a commander, took command of the *Yorktown*. After I had explained my scheme to him and told him what had been accomplished, he became much interested, and gave me permission to shift the sight from the six-inch gun to a six-pounder on the port side of the quarter-deck.

No opportunity to try the sight for accuracy presented itself; but one afternoon in December, 1892, I fired several shots with my eye at the telescope sight to show that there was no danger in so firing, and that the sight itself would not be injured.

Our amusements at Unalaska were of a simple kind, and consisted in going ashore when the weather was good enough, walking about the place, and playing billiards on the single table there, in the little building where were the offices of the Alaska Fur Trading Company. One afternoon when I was playing billiards with the captain, I made the best shot I have ever seen on a billiard-table. After hitting the first ball, my ball jumped up on the rail of the table, ran along the length of the rail to the other end of the table, and then fell off and hit the other ball. We did not have much to amuse us in those days, and the captain laughed till he was almost sick.

Our orders were to leave Unalaska on the first of October, and return to San Francisco. In those days communication with the outside world lasted from May until October, and then ceased until the following May; and as the food supply of Unalaska was very scanty, it was necessary to lay in certain supplies, for instance of potatoes in the summer-time, getting them from the United States.

The day before we left Unalaska, the collector of the port came on board and asked to see the captain. On being admitted to the cabin, he asked the captain to please let him have some potatoes from the ship for his family during the coming winter, as he had *forgotten* to get any. .

We started from Unalaska about six o'clock in the morning. As I was to have the forenoon watch from half past eight to half past twelve, I was not required to be on deck, and I did not turn out until about seven; but before I turned out, I recognized the familiar sound of waves falling on the deck overhead, and realized that we were outside and in heavy weather. So I put on my rubber boots, strapped them around my waist, put on my oilskin coat and sou'wester, and ascended the ladder to the upper deck, to get my regular breakfast of coffee and oatmeal. The deck had more water on it than I had ever seen before, and I could see the tops of waves over both hammock-nettings at the same time. I realized that the sea was not only exceedingly rough, but exceedingly irregular; but I managed to eat a good breakfast nevertheless.

After breakfast I had a few minutes to spare before half past eight, and I looked forward through the window in the messroom-door and saw a very disquieting panorama. I could see the captain on the bridge, with the executive officer on one side and the officer of the deck on the other side, all holding tightly to the rail, water more than knee-deep on the deck, and sloshing violently from side to side as the ship rolled with a short, jerky motion. About two minutes before half past eight I started forward, hoping that I should be able to reach the bridge. I did so; and as I staggered up the bridge-ladder and got on the bridge, a scene met my eyes that at first sight was appalling. The waves, instead of being regular, as they usually are at sea, had no regularity whatever, but were as irregular as the ebullitions in a pot of boiling water. I saw that we were just entering Unalga Pass, one of the passages between the Bering Sea

and the Pacific Ocean, and that while the wind was going out, the tide was coming in. I did not attempt to talk to the officer whom I relieved, nor did he to me. He simply pointed ahead, and I nodded; but he did not leave the bridge until we had passed through the maelstrom, so fascinated was he with the scene and the struggles of the *Yorktown*. It was all over in an hour; that is, the roughest of it was. We then emerged into an ordinary gale and a snow-storm besides, and we carried the gale almost to San Francisco, where we arrived on October 10 with very little coal in our bunkers.

From San Francisco we went to the Mare Island Navy-Yard to get ready for sea again. We did not know where we were going, but we were delighted beyond measure to receive orders shortly after our arrival to go to the place that we would rather go to than any other place in the world, New York.

I had been in the ship now a few days more than a year, and had not been out of it a single night or had any real diversion. I had not even had a bath except such as I took every morning, when the weather was good enough, in a foot-tub; so I got permission to go to San Francisco.

I looked forward with pleasure to twenty-four hours away from the ship, away from discipline, and away from the uniform. I made up my mind that I would go to some kind of show in the afternoon, get a fine dinner at the Palace Hotel, and go to the theater in the evening. So I secured a room with a big double bed and a private bath, and then I set out to walk about the town. The first thing I noticed was the sign "Painless Dentistry." As my teeth had not been looked at for more than a year, the idea of painless dentistry attracted me, and so I went in.

That painless dentist hammered my teeth and gouged my gums and jabbed my nerves with such ferocity and strength, and for so many hours, that when I went out, I was so weak and nervous that I fell into the first bar-

room I saw, and took a drink of whisky. Feeling somewhat revived, I resumed my walk, and I soon saw the sign "Chiropodist." It was now about five o'clock, and as my left big toe had been paining me a little, I went in to see the chiropodist. He fussed about my foot a few minutes, and then gave a pull with some kind of forceps that tore out a piece of my ingrowing toe-nail, and made me yell with pain. When he let me go, I had just about enough interest in life remaining to enable me to limp to the hotel near by. This was my one "day off" in the year.

When our repairs were completed, we joined the squadron of Rear-Admiral Gherardi, and we all steamed for New York. The squadron was composed of the *Baltimore*, *San Francisco*, *Charleston*, and *Yorktown*. We had a pleasant trip through the North and South Pacific oceans, the Strait of Magellan and the South and North Atlantic oceans.

The *Yorktown* reached New York in the middle of February, 1893. I had been in the ship a little over sixteen months, and had been out of it one night.

I joined my little family, living at the Hotel Beresford, New York, and felt that curious, confused feeling that one sometimes has when revisiting familiar scenes and seeing familiar faces after a long absence among diverse scenes, that curious, confused feeling of having been away for a long time, and yet of not having been away at all.

The *Yorktown* went to the navy-yard in Brooklyn for some necessary alterations and repairs preparatory to joining the fleet at Hampton Roads and taking part in the Columbus Centennial ceremonies.

I went to Washington several times during the spring and summer. Commander Folger had been relieved by Captain Sampson as chief of the Bureau of Ordnance; but I found that Captain Sampson realized as clearly as Folger had done the advisability of taking up the question of fitting our guns with telescope sights. I found,

in fact, that he had put an officer in direct charge of the matter.

In July, 1893, I was ordered to the *San Francisco*, a ship much larger than the *Yorktown* and considered to be the best ship in the navy at that time. I was transferred from the *Yorktown* on the insistent request of Captain Sampson, and in order that my range-finder and telescope sight and range-indicators already on board might get a fair test. My transfer was strongly opposed by Commodore Ramsay, chief of the Bureau of Navigation, who was managing the details of officers according to the so-called "block system."

About this time I chanced to see an announcement in the New York *Herald* that the Franklin Institute of the State of Pennsylvania had made to me its annual award of the Elliott Cresson gold medal for 1893, for my invention of the electrical range-finder. The medal arrived in due time, and was received by a man who felt very proud because of receiving it, and who feels so still.

CHAPTER XIII

CRUISING IN THE *SAN FRANCISCO*. WAR IN BRAZIL

SHORTLY after joining the *San Francisco* I wrote the following letter:

U. S. S. *San Francisco*,
Boston, Mass., July 25, 1893.

Sir:—I beg to state that I have a telescopic sight fitted to a 6-pdr. on board this ship, and I would respectfully request that a board of officers be ordered to test and report upon it; and also that I be allowed fifty rounds of ammunition for the purpose of adjusting and testing it.

Very respectfully,

B. A. FISKE,
Lieutenant, U.S.N.

The Honorable Secretary of the Navy.

Concerning this the Bureau of Ordnance wrote the following letter:

Bureau of Ordnance, July 31, 1893.

Sir:—1. The bureau requests that you will appoint a board of officers of your flagship to test and report upon the telescopic sight fitted to a 6-pdr. on board the *San Francisco*. Such ammunition as may be required can be expended for these tests.

2. The attention of the board is especially called to the possible advantage of the telescope as a night sight. The report should contain a description of the telescope and the method of using it.

Respectfully,

W. T. SAMPSON,
Chief of Bureau of Ordnance.
Commander-in-Chief, North Atlantic Squadron.

In accordance with this order, a trial was held in Gardiner's Bay, Long Island, in August, 1893. The trial

was not altogether successful, because, after a few shots had been fired, it was seen that the mounting of the telescope was too weak to stand the vibration produced by the firing. I withdrew the instrument, therefore, until such time as I should be able to have a stronger mounting made.

The excellent report of the range-finder by the board of officers and the captain in the *Baltimore*, after a year's test in service, induced the Bureau of Ordnance to have one installed in the *San Francisco*, and I found it installed there when I reported on board for duty. The bureau had also installed a set of my range-indicators for signaling the ranges from the range-finders to the guns. Captain Sampson had been captain of the *San Francisco* before he became chief of the Bureau of Ordnance, and was therefore much interested in his old ship. Although Captain Sampson was a scientific man, he was a fine seaman besides, and had a very practical turn; so that I had great difficulty in persuading him even to try my range-indicator. He wanted me to devise instead a large dial that could be installed aloft, and which all the men could see from the deck. I was finally able to bring him to my point of view by showing that, while his plan might work very well in the *San Francisco*, it would not work at all in ships with turrets, and that it was high time that we were getting something ready with which to signal ranges to the guns in the turrets. My system was adapted to doing this because the indicator was only about six inches square, and required only two electric wires to carry the necessary electric current to it.

The *San Francisco* made a short trip to Boston in July, took out the naval militia for a week's cruise, and then sailed south. She was the flag-ship of the North Atlantic Fleet, and Rear-Admiral Benham flew his two-starred blue flag at her mainmasthead, but we made the trip to the West Indies alone. We used the range-finder on all occasions possible for ascertaining the distances of points on shore, including the distances of lighthouses

at night, and found it of great assistance to the navigator.

We expected to make a short cruise in the West Indies, and then to go north again; but we knew that conditions were very disturbed in Rio de Janeiro, and thought it possible we might be ordered there.

One afternoon in December, when we were anchored at Puerto Cabello, in Venezuela, and while I was officer on the deck, a telegram came on board for the captain. Immediately after, the captain's bell rang, the captain's orderly went in, and then came out, and then went below; and then the executive officer came up and went into the cabin. He came out in a minute, shaking his head, and said to me, "Make preparations for sea," and went below. I was confident that this meant Rio, and it did.

One of the vessels in the harbor was the *Nictheroy*, which had been a merchant ship, but had been recently purchased by the Brazilian insurgents, named after a town opposite Rio de Janeiro, on the same bay, and fitted out with guns and other apparatus as a man-of-war. One of my range-finders was installed on board, and one forenoon one of the officers of the *Nictheroy* came on board to say he was having trouble adjusting it, and to ask me what he should do. He told me that he could get one of the two telescopes parallel, but could not get the other telescope parallel. Although I realized how difficult it was to get the other telescope parallel, I had to tell him that it would not be proper for me as an officer of the United States Navy to give any assistance to a vessel that was equipped to fight against a government with which the United States was at peace. The officer left, saying some things under his breath. I could not hear exactly what they were, but they did not seem to be of a complimentary character.

Our stay in Rio de Janeiro was extremely unpleasant. We could not go ashore at all; and as it was summer-time in a perfectly land-locked bay, the weather was excessively hot and enervating. Yellow fever was epidemic,

and we could see little boats with yellow flags hoisted, conveying sick or dead persons from one point to another. The Brazilian war-ships, especially the *Aquidaban*, cruised about the harbor, and every evening about five o'clock bombardments of those vessels were started by the Brazilian forts on shore. Of these the most active seemed to be the fort of Sao Jao. One afternoon we saw one of its shells fall on the deck of one of the insurgent ships and explode, throwing up dark-red fumes, which we interpreted as meaning that the shell was filled with cordite.

We could not tell for a long while which side was going to win, but we came gradually to feel that the insurgents were not. The *Aquidaban*, the principal factor on their side, looked as if she were in bad condition; and we finally concluded that it was only a matter of time before they would have to give up.

The insurgent ships established a blockade of the port by sheer force; but as they were insurgents against a government with which our government was at peace, it was clear that they had no reason under international law to expect that Admiral Benham would allow them to exercise their unrighteous blockade against any American merchant ships which might wish to receive or discharge cargo in the port. They attempted to enforce it, however, and of course Admiral Benham protested. The insurgent ships persisted; and they were about to use force when Admiral Benham got his squadron under way, cleared for action, and sent the *Detroit* under Commander (now Rear-Admiral) W. H. Brownson to give an ultimatum to the Brazilian admiral. The Brazilian saw that Admiral Benham was in earnest, and gave up his attempt.

Of course Admiral Benham reported his action to Washington. According to international law, his action was correct; but at the same time there was no exact precedent, because no case exactly like it had before arisen, and Admiral Benham showed great moral courage in doing as he did. We heard afterward that President

Cleveland, on receiving the despatch from Admiral Benham, prepared a despatch in answer, disapproving of his action, and telling him to rescind it. We heard also that this despatch went to the Navy Department to be put in the navy code for cabling some time in the evening; that the officer who did that work could not then be found; that the sending of the despatch was delayed until the following morning; that on the following morning the newspapers spoke of Admiral Benham's action in commendatory terms; and that the President decided then not to send the despatch. I do not know absolutely that the story is true, but it is generally believed in the navy. I have often heard it stated as a fact, and I have never heard it denied or spoken of in terms of doubt.

One evening after dinner I received news of my father's death. It was not unexpected, but I went up on deck and sought the company of my range-finder at the extreme after end of the ship, and stayed there until midnight, looking out into the darkness and at the dim lights of the distant city. I called before my memory all of his unselfish life since I had known him, and repeated to myself continually that noble description of a noble life, "He went about doing good, he went about doing good."

Shortly after, a curious motley squadron, headed by the *Nictheroy*, steamed into the harbor and attacked the forts. The forts surrendered, and the rebellion ceased.

Shortly after, to our great joy, we were ordered to Bluefields, in Nicaragua. We knew that Bluefields was about as uninteresting, hot, and humid a place as one could find; but we also knew that we should be able to get ashore sometimes when there, and to see somebody besides the four hundred men of the *San Francisco*.

After we anchored, I was sent ashore to the consul to get news, and to offer him a passage to the ship. Of course I went in uniform, and wore a sword. When I entered the consul's outer office, I saw him in his inner office with a rather pretty, rather young woman. When

I went in, he introduced me to this lady, whom I will call Mrs. Davis. The consul said to me substantially as follows:

"Lieutenant, this lady is the widow of an American gentleman who went to Honduras and established a large plantation near Cape Gracias à Dios. One night some desperadoes attacked the plantation and killed her husband, cut off his head and threw his body into the river."

"When did this happen?" I asked.

"I do not know exactly," answered the consul. "When did that happen, Mrs. Davis?"

"Oh, let me see," said Mrs. Davis, brightly. "Why, is n't that funny! It happened just a month ago to-day."

On August 17 and December 4 we held target practice at sea. The practice on December 4 was held under conditions of more than ordinary difficulty, in that the weather was misty and rainy, and the sea was so rough that it broke the target away from its moorings. We had intended to hold target practice in the regulation way, with an anchored target; but I pointed out to the captain that here was an opportunity to give my range-finder a real test, in circumstances simulating battle. The captain agreed, and *the result was the most realistic target practice that had ever been held in the navy up to that time*. In my opinion the target practice held by the *San Francisco* that day of December 4, 1893, was a greater single step forward in naval gunnery than has ever been made since. Attention is therefore requested to the following report, and to the fact that it was signed by Captain J. C. Watson, who had been Farragut's flag-lieutenant, and was about the most strictly conscientious man I have ever known.

The report was as follows:

U. S. Flagship *San Francisco*, 2d Rate.

Port au Spain, Trinidad, Dec. 19/93.

Sir:—1. I have the honor to transmit herewith a record of certain tests with the Fiske Range Finder.

2. These tests show that the accuracy of this instrument is sufficient to make it very valuable for the purposes of gunnery, and for many of the purposes of navigation along a coast; and while the range finder is not so accurate as cross-bearings of objects whose positions are exactly known, yet, for all cases where only one such object can be seen, it is very useful; since occasions often arise when it becomes extremely desirable to know immediately the distance of the shore, or of a landmark, when cross-bearings cannot be obtained.

3. The range finder has been used at target practice at sea on the following occasions on board this ship, viz.; in the forenoon of Aug. 17, 1893, with the secondary battery, at distances varying from 1,200 to 1,800 yards; in the afternoon of the same day, with the main battery, at distances varying from 1,500 to 2,100 yards; in the forenoon of Dec. 4, 1893, with the main battery, at distances varying from 2,250 to 3,000 yards; and in the afternoon of the same day, with the secondary battery, at distances varying from 1,500 to 2,200 yards. The ship was moving in all cases, and there was more swell and more motion than are usual at target practice.

4. On all of these occasions the range finder proved itself of great value; in fact, the practice would have been very unsatisfactory without it, because the state of the wind and sea and the depth of water were such that the target drifted so much, that its distance would have been altogether uncertain, had it not been for the indications of the range finder.

5. While my practical experience with the range finder has brought me to the conviction that it is an instrument of real value to the service, both for gunnery and navigation, I beg to state that its usefulness would be much increased if the observing stations were placed in more elevated positions. At present they are placed on deck; and the lines of sight through the telescope are frequently obstructed by powder smoke, boats, stanchions and gun shields. In my opinion the observing stations should be placed well above the deck (in the tops, or on the masts or on elevated platforms) so as to be above powder smoke and all obstructions.

Very respectfully,

J. C. WATSON,

Captain, U. S. Navy, Commanding.

The Secretary of the Navy.

A tabulated list of the various trials was inclosed, and at the end was a statement, "Average error per thousand yards, .55%," about half of one per cent.

Since the trial of the telescope sight in Gardiner's Bay, Long Island, I had no opportunity to have the sight tried again; but on May 7 and 8, 1894, the sight was tried by a board. (*During the nine months that had intervened no change whatever had been made in the instrument except that the original worm shaft that moved the telescope in a vertical plane had been replaced by another somewhat thicker.*)

The board made the following report:

U. S. S. *San Francisco*,
Navy Yard, New York, July 9th, 1894.

Sir:—In obedience to your instructions, we have witnessed target practice with the 6-pounder Hotchkiss rapid fire gun of the ship, fitted with a telescopic sight by Lieutenant B. A. Fiske, U.S.N., and we report as follows:

The target practice was made on May 7, while at anchor at Pearl Cay Lagoon, Coast of Nicaragua, and on May 8, while at anchor off Bluefields Bluffs, Coast of Nicaragua.

On the first day, the firing was done by twelve persons, officers and men, four of them familiar with the use of the telescopic sight, and all of them trained in pointing and firing with the ordinary sight.

On the second day, the firing was done by eight men, only one of whom had ever used the telescopic sight; and he had fired but one shot with it, on the previous day. Two of these men had made zeros in the last quarterly target practice, and one of them had never had any target practice with any sort of firearm.

The fall of the shots was observed, recorded and plotted (Form A) in the regular manner; and the results of the practice are shown in the diagram and data on the two sheets appended and marked A and B.

It seems scarcely necessary to discuss the superiority of the telescopic sight under conditions which admit of its use; that is when the light is sufficient, and the lenses are free from moisture, etc.

It is superior to the ordinary sights just as the telescopic sight

of a transit or a theodolite is superior to the alidade or the sight vanes.

The field of view is easily made as large as that for the ordinary VI-inch gun sights, with the usual aperture in the shield.

With the telescopic sight, the target is seen clearly with the cross-hairs apparently resting on the target itself; all in focus, and with none of the uncertainty arising from more or less coarseness of sight, and in making alinement of sights, near the eye, with a distant object requiring a different focus.

The operation of pointing the gun (bringing the sight on the object) is as easy with the ordinary sight, and it is less fatiguing to the eye. In conditions unfavorable to the use of the telescopic sight the ordinary sights are still available.

The mechanical arrangement of the mounting of the telescope was unsatisfactory. The shock of discharge deranged the adjustment, and made a new adjustment necessary after each shot.

Lieutenant Fiske offers a new arrangement now, which, it is thought, will avoid the difficulties found with the one used during the target practice.

The mechanical details of the mount which was used and the new one proposed, are shown in the drawing on the sheet appended and marked C.

Respectfully submitted,

T. C. McLEAN, Lieut.-Comdr. U.S.N.

AARON WARD, Lieutenant, U.S.N.

F. W. KELLOGG, Lieutenant, U.S.N.

"The mechanical arrangement of the mounting of the telescope," mentioned in the third from the last paragraph of the report of this board, did not mean the mounting of the instrument on the shoulder-piece of the gun, but the means for elevating and depressing the telescope for changes in the range; that is, the combination of the lug under the telescope with the end of the worm shaft that carried the range disk, the two being held together by a spiral spring.

Every time the gun was fired, the lug would hammer the end of the worm shaft violently and make the shaft revolve in its bearings; so that the range disk had to be revolved back every time, and placed at the correct read-

ing. Of course the revolving of the shaft and range disk were perfectly apparent, and it took only a second to turn them back to the correct range indication.

The report does not mean that the telescope sight had to be re-bore-sighted during the trials. I wish to make this point very clear, and to state that neither on board the *Yorktown* nor the *San Francisco* was the telescope sight ever jarred out of adjustment in the sense that it had to be re-bore-sighted. I had noticed the defect in the original trials on board the *Yorktown*, and in an application for patent, which I had made a year before, on May 20, 1893, this arrangement was replaced by a worm and worm-wheel.

One of the drawings of the patent application is shown on page 196. Two of the "claims" read as follows:

"Claim 1. The combination of a gun, a saddle whereon said gun slides longitudinally, a support for said saddle constructed so as to allow said saddle to be moved in a vertical plane, and a telescope or sight-bar supported upon said saddle movable on a horizontal transverse axis, and disposed with its longitudinal axis in a vertical plane parallel to that including the axis of the bore of the gun."

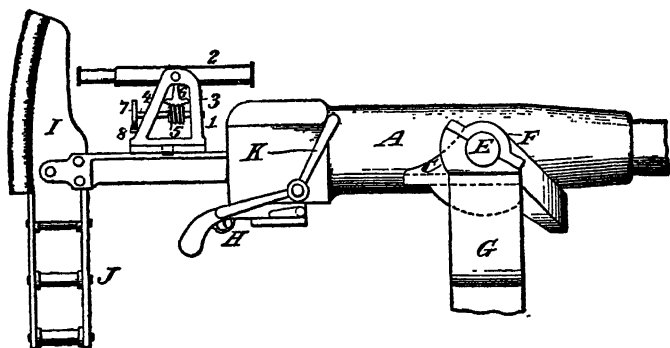
"5. The combination of a gun, a support therefor and a telescope on said support, the said gun and the said telescope being movable about their transverse axes, and the said telescope being supported on an inclined base: whereby the line of sight to a distant object from said telescope is corrected to allow for drift of the projectile thrown from said gun, substantially as described."

This patent is interesting because it describes the fundamental features of all the telescope sights used in all the navies today. In fact claim 5 covers army telescope sights also.

Finally, to our intense delight, we were ordered to the navy-yard in New York. We arrived there about the middle of July for extensive repairs and alterations. One of the alterations was putting the forward instrument of the range-finder on a platform about three feet

high, according to the recommendation of the captain.

During all the trip of the *San Francisco* since leaving New York, about a year before, my range-indicators had been tried as well as the range-finder. The year's test



Telescope Sight.

U. S. Patent No. 558,058. Dated April 14, 1896.

being now virtually completed, the captain sent in the following report, which included both the range-finder and the range-indicators.

U. S. Flagship *San Francisco*, 2d Rate,
Navy Yard, New York, July 19, 1894.

Sir:—1. I have the honor to report that the Fiske Range Finder and Range Indicators, which were received on board this ship Aug. 10, 1893, have, during the intervening year, fulfilled satisfactorily the purposes for which they were intended.

2. In January last, when at Pernambuco, Brazil, I sent to the Department a tabulated record of the errors of the Range Finder, as determined in the various ports, where the true distances could be gotten from the charts. The Average error of all the observations was about $\frac{6}{10}$ of 1 per cent. per 1000 yards. Since that time, I have always made use of the Range Finder at target practice, and in going into and out of port and in coasting.

3. The Range Finder is thoroughly adapted to ship use, as is shown by the fact that its whole care and service are in the hands of three apprentice boys. These boys keep it in order, and go to it, as their station, at general quarters, getting under way and anchoring, and whenever the word is passed "Man the Range Finder."

4. The Range Indicators keep in order with almost no care whatever. There is a transmitter in the conning tower, one reading instrument in the starboard gangway, another reading instrument on the poop. The quiet and orderliness of target practice would be much increased if two reading instruments were added—one for the port gangway and one for the fore-castle.

Very respectfully,

J. C. WATSON,

Captain U. S. Navy, Commanding.

We remained alongside the dock until I was detached on the first of October, 1894. At the time I left, the work on the platform of the range-finder was not quite ready; but I went to the navy-yard two or three times to see that, when the forward range-finder instrument was put back on the platform, it would be put back correctly, and especially that two wires which went from it to the after instrument should be put in their correct places. If the ends of each wire were put where the ends of the other wire ought to be, the instrument would not function. Finally, I received word that the instrument was all ready for me to inspect, and see if it was all right. This was the day before the ship sailed. For some reason which I do not remember I did not go, thinking that the people who had had charge of the instrument for so long a time could not possibly make a mistake in connecting the two wires, and I thought that, even if the two wires were connected the wrong way, the mistake would be obvious the first time the instrument was tried, and that it would not take as much as a minute to correct it.

About a month afterward I received a letter from the navigator in Europe, saying that the instrument was behaving peculiarly and asking me what was the matter. I wrote back immediately that if he would interchange the two wires, the instrument would then work correctly. About a month later I got an answer from the navigator, saying that my letter had arrived too late, and that my instrument had already been dismounted and stowed in the hold, by order of Admiral Kirkland.

CHAPTER XIV

ELECTRIC TURRET-TURNING MECHANISM, STADIMETER, RANGE-INDICATOR, HELM-INDICATOR, ENGINE TELEGRAPH, POSITION-FINDER, SOUNDING-MACHINE, TELESCOPE SIGHT, AND NAVAL WAR COLLEGE. IMPORTANCE OF FORESIGHT, GOOD IDEAS, AND PLANNING IN ADVANCE

ON October 1, 1894, I was detached from the *San Francisco* and placed on waiting orders. In a few days I went to Washington to have an interview with Captain Sampson about my range-finder, telescope sight, and range-indicator, which had been tried successfully in the *San Francisco*, and also about some other instruments which I had recently invented, which I thought would improve the fighting capacity of the navy, and which I wanted an opportunity to develop. I saw Captain Sampson, but only long enough to make an appointment for three o'clock that afternoon. Shortly afterward I passed Commodore Ramsay in a corridor of the department. He greeted me courteously, with the very agreeable manner which he always had; but I was sorry that he saw me, because I knew that he disapproved of an officer doing things not in accordance with precedent.

Later in the day an officer came to me and told me confidentially that Commodore Ramsay had given orders that I should be put on duty immediately—anywhere. So I went in to see Captain Sampson before the appointed time, and told him of the danger I was in. He leaned back in his chair, and gazed at me fixedly for a long while from the handsomest eyes I have ever seen. Finally, he said, "Would you like to take up the application of electricity to turning turrets?"

I answered that the idea was not altogether new to me;

in fact, that I had a patent for doing it, but doubted very much whether electricity was as good for that purpose as hydraulic power. Sampson said he thought that the subject was worth investigating, and that he had already had some preliminary trials made on board of an old monitor that were very promising. I said that I feared that my having a patent of the kind that I did have might make it improper for me to take up the work. Sampson said he did not care whether I had a patent or not; all he wanted was to find out if electricity would do the work better than existing agencies. Our discussion ended in my realizing that an opportunity for doing valuable work was being presented, and by my saying that I would gladly undertake it. I then told Captain Sampson that I thought I could do the work better if I lived in New York than if I lived in Washington, because it was nearer to the centers of electrical activity. Sampson said he did not care where I lived; all he wanted was to get the work done in the best way.

The reason for my giving this conversation at such length is to indicate why it was that during all his long career Sampson was always able to get the best work possible out of everybody under him. He was a man exceedingly cold in manner, the reverse of a politician in every way, and took little trouble to make himself agreeable; but he nevertheless inspired, and always kept, the enthusiastic loyalty of every officer under him, so perfectly loyal was he himself, so straightforward, and so able.

I went back to New York and got into communication with the electrical companies at once. After trying some more or less crude apparatus, it finally became apparent that the most promising plan was that proposed by the General Electric Company at Schenectady. They called it the "Ward-Leonard System," because it was covered by the patents of that distinguished electrical engineer. It was not practicable, of course, to send a turret up to Schenectady, but the electrical engineers there designed

a very ingenious and effective plan whereby a man of imagination would be able to judge of what the Ward-Leonard System could accomplish. Fortunately for me, my old friend Dana Greene, who had assisted me in my wireless telegraph experiments in the *Atlanta*, was then at Schenectady, in a high position in the company.

I was engaged at this work for more than two years. I lived in New York, and went up to Schenectady frequently, whenever the company informed me that they were ready with the changes in the apparatus which the last trial had indicated to me as desirable, and which I had asked them to make. As the final step, I myself was so fortunate as to be able to devise an improvement whereby the system was made directly practicable for the work. I patented my invention, and sold it to the company for the exact amount that getting the patent cost me.

Finally, the apparatus was got to working well, and I reported the fact to Captain Sampson. I received an order from him to meet him at a certain train in New York and to go with him to Schenectady. When we arrived at the works, and the performance of the apparatus was shown to him, his habitual and almost frozen reserve melted, and a cheerful geniality took its place. I have never seen a man more delighted.

It was natural that he should be delighted, for not only had a work in his bureau that had been going on for two years been brought to a successful issue; but it had been brought to a successful issue against the prediction of the two other constructive bureaus of the Navy Department, the Bureau of Construction and the Bureau of Steam Engineering; and the Navy Department had become so sure that Sampson had been working on a wrong line that it had taken the handling of turrets away from the Bureau of Ordnance and given it to the Bureau of Construction.

Shortly after Sampson returned to Washington, I received an order from him stating that two naval constructors had been ordered to go to Schenectady to ex-

amine and report on the electric turning-apparatus, and directing me to get into touch with them and inform them thoroughly on all matters connected with the Ward-Leonard System and its application to turrets, including my own contribution. So I went to Schenectady, and stayed with these two officers during the two days that they were there examining and testing the system.

In a few days I received a letter from Sampson, dated December 21, and inclosing a copy of the report which the two constructors had made as a result of their visit. The report was dated December 11, 1895. It went into the whole subject of turret-turning machinery, and in conclusion condemned the use of electricity. The report compared the relative values of steam and electricity under seven heads: reliability, accuracy, simplicity, space, weight, cost, and time required to complete the installation in the particular case of the U. S. S. *Brooklyn*, which was the next ship to be completed. Sampson directed me to give careful consideration to their report and to submit my views.

In reply, I submitted a letter, dated December 24, 1895, in which I admitted the superiority of steam in simplicity, cheapness, weight, and space, but said, "If these were the principal things required in a war-ship, we should now be building sailing ships like the *Dale* and not ships like the *Brooklyn*"; and that, "from all the standpoints of gunnery, the electric system has advantages over the steam which cannot be overestimated."

My letter was thirteen pages long, and was written to prove things which everybody now knows. After I had finished the letter, however, I realized that, as was usually the case in the navy in important matters like this, the decision would be made by people who had no knowledge of the requirements of war, and that my letter was merely a theoretical answer to a theoretical argument. For about an hour I went through as profound a period of discouragement as I have ever endured, realizing that not only would all my work probably be thrown away, but,

which was more important, the navy would probably lose a valuable appliance of war.

Suddenly an idea occurred to me, and I wrote at the end of the letter :

I beg to suggest, for the consideration of the Bureau, that, in order to arrive at an absolute comparison, in practice, of the merits of the two systems, both for the *Brooklyn* and for the navy in the future, it might not be bad to equip two of the *Brooklyn's* turrets, say the forward one and the starboard one, with steam machinery, and the port and after one with electric machinery. If this were done, the two systems could be tried on board the same ship, by the same officers, at the same time, and under identical conditions of wind and sea ; so that an absolutely fair, conclusive and final test could be made.

I learned afterward that Captain Sampson was much pleased with my letter, and that he then wrote a letter to the Navy Department which was virtually a copy of my letter.

Sampson vigorously pushed the acceptance of the electric system ; but the Bureau of Construction opposed it, and was supported by the Bureau of Steam Engineering. The man who had to decide was the Secretary of the Navy, who knew almost nothing about any phase of the subject, and least of all about the most important phase, which was the applicability of any kind of system to the requirements of naval gunnery in war. Captain Sampson knew a great deal about this, whereas the Bureau of Steam Engineering and the Bureau of Construction knew almost nothing. The result was that the secretary could not come to any decision whatever. Thus this important matter was held up *because of the lack of any one who combined the necessary authority with the necessary knowledge!* Dana Greene went to Washington and virtually lived there for months. Finally the secretary decided to permit the competitive trial, the General Electric Company installing the apparatus at its own risk.

When the four turrets were ready for the competitive

trial, a board of officers was appointed and they conducted some very careful trials. The report which they made as the result was favorable in the highest degree to the electric system. One paragraph read as follows:

For the purpose of ascertaining the degree of accuracy with which each gun could be pointed at any desired object, distant objects were selected, upon which the guns were turned. It was found that the electric controlled turrets could be turned from any point within the limits of train, and brought to rest with the object previously selected between the cross hairs of the sighting telescope, with great facility; the controller being readily worked with the operator's eye at the telescope, and the turret having a smooth and regular motion. While it was possible to arrive at the same result with the steam turned turret, it was only done with considerable difficulty; owing to the fact that the controlling lever could not be worked with sufficient facility, with the eye of the operator at the sighting telescope, and to the jerky movement of the turret.

No triumph could have been more complete. The forces of ultra-conservatism were utterly routed, and a most important step in the forward progress in the navy thereby permitted. The Ward-Leonard System, including the improvement I had made for adapting it to ship use, was adopted by the navy, and *was one of the important reasons for the improvements in gunnery which afterward resulted*. This system continued to be used until it was supplanted by another system, which in turn has been supplanted by others, with the progress of the arts; but these systems have all been electric. Possibly I may be permitted to feel a little self-satisfaction sometimes when I reflect that I was the humble agent, under Captain Sampson and against powerful opposition, in bringing about this great improvement in the naval gunnery of the United States.

I was on duty in connection with this work from the first of October, 1894, till the tenth of December, 1896, when I was ordered to the *Petrel*, fitting out at Mare Island, California, for service in Asia. This order to the

Petrel was given against the protest of Captain Sampson, who wished to have me ordered to the *Brooklyn*, for the reasons that the *Brooklyn* was to have the electric turning system, and that several other of my inventions were to be installed in her, and he wanted them to be given every proper chance of passing the tests successfully.

Living at the Hotel Beresford, where I lived with my family at this time, was a Mr. Henry Morgenthau. Mr. Morgenthau made a trip to Europe, with his family, and it occupied about a year. Shortly after his return, as we were walking down to the elevated station one morning, he told me of the pleasant trip they had had, and I said:

"And now I suppose you are going to settle down to hard work again."

"No," he answered, "I do not believe in hard work; I believe in good ideas. *One good idea is worth a year of hard work.*"

This remark of Mr. Morgenthau I have treasured as one of the half-dozen remarks worth hearing that I have heard in all my life. Mr. Morgenthau, after many years of success in financial matters, became our ambassador to Turkey. Twenty-three years after our conversation I met him at the annual dinner of the Economic Club in New York, and reminded him of our conversation. Mr. Morgenthau said he did not remember the conversation, and did not know that he had ever expressed himself in those words. "But," he added, "I have modeled my whole life according to that principle."

The manager of the Western Electric Company's branch in New York at this time was Mr. H. B. Thayer, a man somewhat younger than I, for whose character and ability I had come gradually to have a deep respect.

One day when I was talking with him, he enunciated a principle that I have always remembered, and that has guided me ever since. I had said:

"Mr. Thayer, you're quite a young man, and you're the manager of a great organization in New York, which

is getting larger every day, and yet you never seem to have anything to do. I have often wondered how you manage it."

Mr. Thayer flushed a little, for he was a modest man, and said:

"Why, Mr. Fiske, I don't have very much to do, really. It's the other men who do the work."

"That's all right, Mr. Thayer," I answered, "and I appreciate your modesty and all that; but would you mind telling me how you do it? I'm talking seriously, because this work is like navy work in some ways, and I think you could tell me something that could help me in my profession."

Mr. Thayer hesitated for a few minutes, and then said:

"Well, I'll tell you. I try to keep away from the details of the work and from other men's jobs, and to keep my attention on the main points, on my own particular job. I have the whole establishment divided into departments, and each head of department is expected to run his own department himself, and not to come to me unless he gets into trouble. I've tried to arrange everything so that the establishment will run itself whether I am here or not. Then I am free to do what I think is my work, which is to look ahead and see what's going to happen, and prepare to do the proper thing in time. *I think the worst thing in the world for a man to do is to get into a hurry. My observation shows me that if a man does a thing in a hurry, the chances are a hundred to one that he won't do it well.*"

In thinking this over, I compared it with what Captain Taylor had said about foresight and what Mr. Morgenthau said about one good idea being better than a year of hard work, and I said to myself:

"Now the first thing to do is to look ahead; the second is to try to get good ideas; and the third thing is to arrange your work in such a way that when you have to do anything, you will not have to do it in a hurry."

These three remarks have been the ones that seem to

me the wisest in point of mere worldly wisdom of any that have ever been made to me. But are they any more significant than the remark of the half-educated sailor on my practice cruise, that it is easy to be a naval officer, but hard to be a good one? Obviously, as the old sailor said, it is the same in every other vocation: it is easy to occupy any position, but hard to do its duties well. Now, if there is enough difference between a good naval officer and a poor one for a half-educated sailor to see it, how great must be the difference between good lawyers and poor ones, between good doctors and poor ones, between good legislators and poor ones, between good administrators and poor ones!

How much greater difference, also, there must be between good officials and poor ones in the departments of the government, in which selection for posts of authority and responsibility is less carefully made! In the navy no young man can be admitted even to the lowest class at the naval academy unless he is of good moral, mental, and physical character; he cannot graduate until after he has passed a satisfactory moral, mental, and physical examination of great rigidity; and he can not be promoted to any rank thereafter until he has passed rigid moral, mental, and physical examinations. And yet *in almost every other governmental organization—Congress, the Supreme Court, the Cabinet, the departments, and all the state and municipal positions, no examination of any kind is held; and the matter of fitness for a position seems to be the last point considered in appointing a man to fill it.*

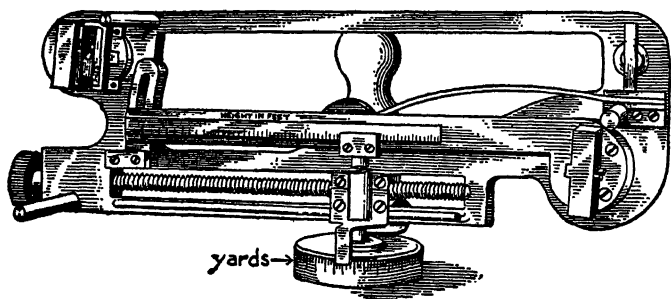
It is abuses of this character that lend color to the charge that democracies are inefficient. But abuses of this character can exist in autocracies as well, and often have. *The fault is not with either form of government, but with the politicians or other incompetents who misdirect it.*

About this time Mr. Bryan was making one of his "peerless" tours through the country. One night I was

talking about his tour with Mr. Theodore Weicker, a young business man. We were saying how strange it was that in a civilized country a man ignorant of the first principles of finance, and lacking that kind of ability which makes a successful business man or a successful professional man, should be able by sheer eloquence to obtain leadership in matters requiring for their successful handling just the kind of knowledge and ability that he lacked. Weicker and I agreed entirely, but Weicker said there was one thing about Mr. Bryan he admired very much, and that was the physical endurance which he displayed—an endurance which, Mr. Weicker said, no man could possibly have, except a total abstainer from alcohol. I was much surprised to hear this from Mr. Weicker, because I knew that he was a man of splendid intelligence and accurate knowledge, and yet I had always supposed that alcohol was good for a man if he did not drink too much. After that on every opportunity I took careful note of the effect of alcohol, both from my own experience and observation, and from reading, and it was not long before I came to believe that Weicker was right.

About this time I met occasionally—by chance, it seemed to me—the German military attaché, a young man holding the rank of captain. As he and I were of equal rank, I did not think it odd that he invited me to lunch one day when he was in New York. But I was a little surprised when he led me to Delmonico's instead of to one of the cheaper restaurants where I usually took my lunch. We had a far more luxurious lunch than I had expected, including a quart of Rhine wine, which the captain told me was of an old and rare vintage. When he came to pay the bill, I saw that it was for more than thirteen dollars. I thought over the incident that afternoon, and concluded that the captain must have had some end to serve. I concluded also that probably he had succeeded, because I remembered that I had talked a good deal, and the captain very little.

During the time that I was on the duty of adapting electricity to turning turrets I was able to construct a number of new appliances that I invented. My two range-finders in France, after working well for a while, had finally gotten out of adjustment, because there was no one in charge of them who combined knowledge of the instruments with any special interest in them; but in some of the other navies they seemed to be working very well. The report on my range-indicators in the *San*



The Stadimeter.

U. S. Patent No. 496,075. Dated July 31, 1894.



Operating the Stadimeter.

Francisco had been so good that the Bureau of Ordnance adopted them for the new ships.

One of the first things I took up was the making of a stadimeter, a small and simple instrument which I had invented in 1890, but had never been able to get made. It was designed as an auxiliary to the range-finder, and to meet the objection that, even if the range-finder worked well in the first part of a battle, it was so vulnerable to gun-fire, that it probably would be put out of action soon.

By the use of the stadimeter, I thought that this difficulty could be overcome, because the stadimeter was so constructed that, when the range-finder took its first reading of distance, the stadimeter could be set for that distance, and the height of the mast of the enemy ship could be then read off the stadimeter, using the stadimeter like the sextant to bring the reflected image of the top of the mast into line with the direct image of the water-line of the ship. After that the stadimeter could be set at that mast height, and the range read from it by continually keeping these two images in line. When I was in Europe, and afterward in the *Yorktown* and *San Francisco*, I could not get the company even to patent it, because they conceived the extraordinary notion that it would interfere with the range-finder. When I got home from the *San Francisco* cruise, however, I finally convinced them of their mistake, and got authority to make two. One of these was sent to the U. S. S. *New York*, and the other to the U. S. S. *Cincinnati*. The reports from both ships were not only favorable, but enthusiastic.

The stadimeter was a success from the start, and has been ever since. All our vessels now are supplied with it, and it can be found in somewhat modified forms in all the principal navies. Not long ago some man asked me how much money I had made on the stadimeter. I told him that I had never made any money on it, but that I had the honor on one occasion of paying out fifty-five cents to send a stadimeter by express somewhere.

During my cruises in the *Yorktown* and *San Francisco* I had invented a helm-indicator, a steering-telegraph, an engine telegraph, and a speed and direction indicator.

All of these instruments except the last utilized the same principle that I had utilized in the range-finder and the range-indicator—I mean the principle that, if a current of electricity is sent through an arc of resistance wire, which has in circuit with it a volt-meter or galvanometer, the indications of that volt-meter will change instantaneously with the current which it receives. There-

fore if the wires which go to the volt-meter be moved along the resistance wire, the volt-meter can be made to indicate the positions to which those wires have been moved, and it is possible to make apparatus which can indicate at a distant station any desired signal by simply moving a contact along a resistance wire.

In the helm-indicator the arc of resistance wire was placed near the rudder of the ship in such a way that, when the rudder moved, it caused a contact to move over the arc of the resistance wire, and thereby caused indications to appear that showed the positions of the rudder on any desired number of volt-meters, these volt-meters being incased in heavy iron frames, made strong and water-tight. In the steering-telegraph, an officer on the bridge or in the conning-tower moved a contact over the resistance wire to some such mark as "starboard 10 degrees," and thus caused the order "starboard 10 degrees" to appear instantly on an indicator (volt-meter) placed near the steering-engine or at any other desired point.

The engine telegraph was a much more complicated apparatus, but based on the same principle. It was beautifully made by the Western Electric Company, and was one of the finest pieces of apparatus that I have ever seen. By it an officer or a quartermaster, by manipulating two handles, could give orders to both the starboard and port engine-rooms as to the speed at which he wished each engine to be run, and would get back an indication immediately that the order was understood. It was more accurate than any engine telegraph ever produced before, and more complete than any other produced since.

The speed-and-direction-indicator consisted of an alternating volt-meter, in circuit with an alternating current dynamo which was turned by each main engine of the ship. The faster the engine turned, the greater was the deflection of the volt-meter.

All these instruments were first tried by boards of officers, and afterward were given service trials in ships,

lasting usually from six months to a year, before they were adopted. In February, 1896, the use of my inventions, except the telescope sight, was as shown in the following table:

Range-finders. These were installed in the *Baltimore, San Francisco, New York, Columbia, Minneapolis, Cincinnati, Maine, Texas, Indiana, Massachusetts, and Oregon.* Five more had been ordered, and were nearly completed, but they had not yet been assigned to ships.

Range-indicators. These had been installed in the *San Francisco, Cincinnati, Maine, Texas, and Indiana,* and were about to be installed in the *Massachusetts and Oregon.*

Stadimeters. These had been issued to the *New York, Cincinnati, Maine, Texas, Indiana, Raleigh, Montgomery, Columbia, and Minneapolis.* Ten more had been ordered, and they were then completed and about to be issued.

Engine telegraphs. *New York, Indiana, and Massachusetts.*

Helm-indicators. *New York, Indiana, and Massachusetts.*

Speed-and-direction-indicator. *New York.*

Steering-telegraphs. *New York, Indiana, and Massachusetts.*

Each one of these inventions was an invention radically new and not a mere improvement over somebody else's invention. As far as I have been able to ascertain, not only were they new, but the telegraphs and indicators were the first successful endeavors made by anybody to overcome the handicaps to interior communication, which had been produced by the new and complicated construction of steel war-ships; and the range-finder was the first successful endeavor to ascertain the distance of the enemy with a satisfactory degree of accuracy. A partial exception to this statement must be a range-indicator tried in the British Navy shortly before by the old "step-by-step method," which was not satisfactory.

To these various inventions Mr. Park Benjamin gave the happy name "The Nerves of the War-ship," and in a brilliant article which appeared in *Harper's Monthly* in March, 1896, he pointed out that they served the same purpose in carrying information and orders to the material guns and engines of a ship as do the nerves of the human body in carrying information to the brain, and orders to the muscles. In the course of the article Mr. Benjamin said:

To assert that we have not made progress in providing nerves for our ships commensurate with that achieved in creating brains and muscles is, in substance, to say that the inventors of the country have not dealt with the problem. The single fact that, of the important instruments before detailed, most of them, the range-finder, the stadimeter, the range-indicator, the telescopic sight, the newest forms of helm and engine controlling telegraphs, and the speed-indicator, are the invention of one man, Lieut. Fiske, and he an officer in active service in the Navy,— is sufficient to show how little attention the subject has attracted from the fifty thousand ingenious Americans who yearly ask the government for patents.

Concerning this article, *The Army and Navy Journal* said:

The importance of Lieut. Fiske's electrical inventions is clearly indicated by the graphic description given by Mr. Benjamin of the conditions under which a modern naval engagement must be fought. He shows how nearly such an engagement approaches to a free fight or "mêlée" controlled solely by chance; and how as between equally powerful ships, that one may be expected to win which is the more skillfully handled during the fight. "As between two fleets otherwise equal," says Mr. Benjamin, "that fleet will prevail, the ships whereof are by their respective commanders the more dexterously controlled." To have the various mechanical contrivances of the complex mechanism of a man-of-war subject to the will of the master, is the first step in efficient control. Says Mr. Benjamin, "If between him who directs the vessels in combat and the engines, the guns, and the helm, efficient instrumentalities strictly analogous to the nerves

in the body are absent, dexterous working of that mighty fabric is impossible, and a paralysis greater or less in degree, must ensue."

From this time until I left for the *Petrel* and Asia in December these various instruments continued to be supplied, and for some time thereafter. I was away from New York, however, for considerably more than three years, and at the other end of the earth. Mr. Oastler, who had been my assistant, had taken a position with the Western Electric Company in Europe, and the result was that there was no person or persons so immediately interested as to take that care which is always required in order to establish new apparatus in use. As time went on, other apparatus were presented to fulfil the same purposes, based on what these instruments had accomplished and on the faults which they had developed, and brought forward with the intention of improving on them. These new instruments had the advantage of the propelling power of some person behind them, while my instruments had nobody behind them. The result was that, as the years went by, my instruments were gradually replaced by others.

Two exceptions to this remark are the stadimeter and the telescope sight. Both of these instruments have continued in use to the present day. I do not believe that there is any gun as large as three inches in caliber on board of any ship in the world that does not use my telescope sight.

Concerning the telescope sight an official text-book of the United States Naval Academy called "Ordnance and Gunnery" said, "It was the introduction of the telescope sight, with its added advantages that has well-nigh caused a revolution in naval gunnery. It was an improvement so great, that it may well be ranked with the change from smooth bore to rifled guns."

On May 20, 1893, I applied for a patent on a "telescopic sight," which described and illustrated an apparatus for use with guns of a kind like the six-pounder

on which the telescope sight had been tried in the *San Francisco*, in which the gun recoiled in a sleeve, but the sleeve did not recoil; the sleeve being pivoted on the trunnions, and the telescope being attached to the sleeve. A patent on this was granted on April 14, 1896, and it covered virtually all of the methods used since then, in adapting telescope sights to ships' guns, more specifically than did my previous and broader patents.

One feature claimed and patented was a way of tilting the sight to the left or right in order to correct for the "drift" of the projectile. This patented feature has been infringed, I believe, by all the guns in the world except muskets. I know it was infringed by our own army, and I was about to institute proceedings at one time; but just then I was ordered to sea.

Besides these navy things, I invented a position-finder, based on the same principle as the range-finder, but adapted to forts, and this was placed into position at Fort Hamilton. It was tried in June, 1895, and was perfectly successful. By this time, however, the telephone had acquired the confidence of the people to a degree which it had never had before, with the result that it was found possible with the telephone and a few simple appliances to do virtually all that my instrument did.

Fort Hamilton was a delightful place in those days to a man who went there from the hurry and noise of New York. There were about seventy-five soldiers in the entire fort, and somewhat fewer than seventy-five officers. I do not remember how many; but they were very numerous in proportion to the number of enlisted men. There was almost nothing of any kind to do, because there was nothing to be done. The few old guns that were there were useless for any practical purposes, and this was so well known that few drills were ever held with them. Once a year the annual target practice was held, and a target was anchored somewhere out on the Lower Bay. Then the old cast-iron guns were slowly loaded one by one, and fired one by one, at the target, which was

not very far away, the gun crew getting behind a safe bomb-proof and firing the gun by electricity; because they were afraid it might burst. The lieutenants went on duty for twenty-four hours once in nine days. When an officer was on duty, he walked about the fort once in a while, and went to the morning guard mount. When an officer was off duty, he only went to the guard mount. The seventy-five enlisted men were mostly old inhabitants there, who spent their time as energetically as the officers, but hardly more so. One of the officers—I think the adjutant—was Lieutenant Harris, who was fifty-five years old. Harris was an able, energetic, and intelligent man; it seemed a shame that a larger field could not be found for his abilities.

One afternoon I had a curious experience at Fort Hamilton that I have never been able to explain to myself. On one of the days when my position-finder was being tested, I showed my stadimeter to the board, thinking that it might be found useful for finding the range, or the change of range, of an enemy ship from a fort. Now this stadimeter had found its way easily into ship use, because the apprentice boys could be easily taught to use it. Yet when I showed this instrument to the highly trained and scientific officers of the board, some of whom were engineers, some of whom were ordnance officers, and some of whom were artillery officers, I could not make a single one of them understand it. Not only this, but I could not explain its practical use in such a way that any of those officers could take it into his hands and use it!

In July, 1896, my wife's father died. An affectionate, modest, and able man of the scholarly type, he left behind him in the hearts of those who knew him a loving and lasting memory.

In September, 1896, I published in the *United States Naval Institute* an article called "Electricity in Naval Life." It was very long, and went into all the naval uses of electricity, past, present, and prospective, and attracted considerable attention both in the United States

and abroad. *The Army and Navy Journal* said of it, "His article on the subject of electricity as applied to naval affairs is the most complete thus far published."

At this time it was hardly respectable to be an electrician. Any man who wished to preserve a high standing among his acquaintances was apt to speak of electrical men as being visionary and of electrical apparatus as being unreliable. Naval officers assumed a tone somewhat more advanced than this; a practical naval officer of sound judgment would be apt to say something like this: "I believe that there is a good deal in electricity, and I think that we should give a certain amount of encouragement to electricians, and grant any naval inventions that are proposed a fair hearing; but at the same time we must not forget that it is seamanship and guns that should receive the serious attention of the naval officer, and not these electrical devices, which, after all, are not very important."

So my article was not received with much approval, especially by the elderly officers occupying high positions, and more especially by officers like Commodore Ramsay and his followers. Paragraphs like the following, which is taken from the article, were especially distasteful to men of this class:

Let us hope that we soon shall see a civilized modern ship, in which there shall be a fine, large, dynamo room, like those under the great New York hotels, where power will be generated for lighting the ship, making the signals, hoisting the ammunition, turning the turrets, operating the telephones, hoisting the boats, ringing the bells, weighing the anchor, sounding the alarms, running the launches, firing the guns, steering the ship, etc. And why should we not have a neat electric galley, such as are frequent in New York, where the meals of all can be prepared in cleanliness and quiet, with only a fraction of the fuss and confusion now attending the getting of the food and coal, and the heating of the water? And why should not both officers and men, when they go on night-watch, frequently in the wet and rain, be given a light repast, cooked on an electric stove, the size of a quart pot?

Of course, all these things have long since been done.

In October, 1895, I was attacked with a very distressing intermittency of the heart. Without the slightest apparent reason the heart would lose a beat, and very frequently. Having been told so many times by the doctors on my examinations for promotion that I had organic disease of the heart, this naturally led me to think that my last hour as a living human being was approaching. Finally I consulted a navy doctor, an elderly man of long experience, and he, after examining me several times during a period of two or three months, told me frankly that he did not know what was the matter with me, but that he thought I might be nervous, in which case I ought to consult a nerve specialist. Several years afterward this doctor's sister told me that the doctor told her at this time I could not live two years. I went to a nerve specialist, however, Dr. Graeme Hammond. Hammond gave me some quieting medicine, which helped me; but I think that which helped me a great deal more was the psychic or mental influence he exercised on me, and his consequent ability to impress me with the idea that the trouble was not organic, but functional.

The trouble was not entirely overcome, however, for my heart would continually lose a beat. I gradually became accustomed to it in a measure, but of course not wholly. When I awoke in the morning my heart would begin to behave in the most fantastic and erratic way, gradually becoming more regular during the day, but not entirely so. One night during the following winter, being threatened with a cold, I took ten grains of quinine before going to bed. When I awoke the following morning I did not seem to have any heart at all, so smooth and regular was its beating. In the years that followed, whenever my heart got particularly irregular, quinine would always steady it materially. During the following three years the intermittency was very troublesome at times, but along a decreasing scale. During the last few years I have been troubled with it very slightly.

Different doctors have given me different reasons for the trouble. My personal belief is that it was, like most other troubles, the combined result of many causes, and that in this case the principal cause was indigestion.

During the year 1896 I worked out a plan which I had had in my mind for a long time for signaling from ships. The principal means of signaling then was with flags, which had the drawbacks that their colors could not be easily distinguished over long distances, that sometimes the flags hung straight up and down, and at other times the wind would blow them in such directions that they could hardly be seen. After making many trials with small shapes of different kinds, painted in different colors, I finally concluded that the semaphore, or revolving arm, could be seen farther than anything else of the same area, and could be made to move more quickly and with less power.

So I devised a system in which there should be on the mast four arms, one under the other, about ten feet apart; each arm about six feet long and a foot wide, each arm working in pair with another arm, which was at the same height, but which moved in a vertical plane at right angles to it. The apparatus was just completed in the shop when I had to leave to join the *Petrel*. A few days before leaving we set the whole apparatus up in a big room at the Western Electrical Company. The apparatus was electrical, and so constructed that, by touching a letter, say "A," on a keyboard, the two upper arms would instantly revolve into the horizontal position: whereas by touching another letter, say "Z," all four arms would assume a horizontal position. When everything was ready, and several people had congregated to see the result of the experiment, I touched the letter "A." To our amazement, the apparatus signaled Z!

I explained that the workmen had probably got the keys on the key-board misplaced, and then I touched the letter "B." To our greater amazement, the apparatus again signaled "Z." I tried all the other letters of the

alphabet, and no matter what letter I touched, the apparatus signaled "Z." As this was almost my last day before leaving, this curious performance was discouraging. It was soon discovered, however, that it was merely a matter of a wrong connection of the return wire. The error was rectified in a few minutes, and then the apparatus signaled the various letters touched in the most correct and obedient fashion.

Another invention that I was developing at this time was a sounding-machine. It had occurred to me some years before that a mass of a given weight and shape must sink in water at an absolutely definite speed, and that therefore it was merely necessary to drop a weight overboard, start a stop-watch when the weight struck the water, and stop the watch when the weight struck the bottom, in order to find the depth of the water. In following out this idea, I thought the attempt could be accomplished in a practical way by having the weight attached to a wire, like the lead in a Thompson sounding-machine, and that the instant the lead struck the bottom would be indicated by the sudden slackening of the wire. When I was in the *Atlanta*, and afterward in the *Yorktown* and *San Francisco*, I made several crude experiments along this line which, though they were crude, promised excellent results, if properly followed up.

So, in the early spring of 1896, I got the Western Electric Company to make an apparatus embodying this idea, and when I went to the war college in Newport during the summer, I made many experiments with it that were quite successful. In order that the weight should present the same surface to the water, and therefore meet the same resistance to sinking in all circumstances, the lead was spherical, being a round ball of lead and twenty-five pounds in weight. The principal trouble I had was the extreme difficulty of getting water deep enough for trial, in places where the depth was known with sufficient accuracy, largely because of the shallowness of the water on our Atlantic coast.

When I received orders to go to the *Petrel*, the Western Electric Company built me another machine like the one I had already tried, but with certain improvements which the experiments indicated. This machine was afterward installed at the extreme after end of the *Petrel*. As I was to be the navigator, I looked forward to having many opportunities for testing it, and of finding it a great help practically to me in the discharge of my responsible duties in navigating the ship near the rocky coast of China.

During the summer of 1896 I was one of about twenty-five officers who formed the annual class at the war college in Newport. Captain Harry Taylor, who had been my captain in the *Saratoga*, was the president, and a most excellent president. He had that peculiar combination of knowledge, foresightedness, and tact which is rare, and which is potent when dealing with large questions. The war college was then staggering along, supported by a few men like Taylor, all inspired by Admiral Luce; but it was ridiculed by most officers, and opposed by men like Commodore Ramsay. Ramsay was the principal obstacle, not because he represented the thought of the Navy, which he did not, but because he had a good deal of ability in the line of organization and detail, and mainly because he was the chief of the Bureau of Navigation, and the principal adviser of the secretary in strategy.

Very few of the class took the course seriously; and in order to induce officers to go to the college, except against their will and therefore in a non-receptive mental state, Taylor made the courses as easy and pleasant as possible. The officers were expected to be at the college by nine in the morning and to remain there till half past one; that was all. A good library was placed at their disposal, and interesting lectures and war games were offered for their instruction; but the whole endeavor was to convince officers of the usefulness of the college and not to force them to do any-

thing. To me personally the course in international law was the most interesting. I had become interested in it at the Naval Academy, where I had stood at the head of the class in that study, and I was very glad to take it up again. But on taking it up again at the relatively mature age of forty-two, the flimsy nature of the basis on which it rested became apparent. Despite its evident value, it was evidently not law at all, or hardly even a collection of principles; but rather an aggregation of precedents and agreements, which were very convenient as a basis of future agreements and decisions, so long as no very great national issue was at stake, but which lacked that force to compel obedience, on which all law must rest,—if it is to be effective.

One idea was apparently held by the war college and by Captain Taylor, that seemed to me to be incorrect—the idea that strategy was independent of mechanism. One forenoon there was a discussion held by all the class and the staff of the war college, Captain Taylor presiding, in regard to a certain kind of attack. I was one of the junior members of the class, but I remember arguing that the decision reached was incorrect then, although it might have been correct a few years before, because a certain kind of weapon had been developed in the intervening time. And I also remember Captain Taylor pointing out courteously, but forcefully, that my views were incorrect, because strategy was not concerned with weapons, which changed, but rather with principles, which never changed. At that time Captain Taylor was doing a splendid work in trying to wean officers from too close attention to the materials of warfare, such as guns, etc., and to show them that all those material things were simply tools which strategists used, just as a workman uses a hammer. I felt dimly then that Captain Taylor was carrying his idea too far, and I think that I was right. In fact, I am sure that army and navy officers realize now that, while the principles of strategy do not change any more than do the principles of mechanics, yet

the applications of the principles of both strategy and mechanics must change in order to keep pace with the new appliances and mechanisms that are born.

There was a great deal of social life at Jamestown, on Narragansett Bay, opposite Newport, that summer. One evening quite late I happened to stroll in some dim part of one of the piazzas and I heard a woman's voice say:

"What kind of a man is this Mr. Fiske?"

"Oh, I think he 's a very nice man in some ways," said another voice. "He 's awfully learned, you know; but he 's as slow as a post."

CHAPTER XV

ON THE CHINA STATION

ONE bright afternoon I took the four o'clock train from the Grand Central Station, New York, bound for San Francisco, or rather for the Mare-Island Navy-Yard and the *Petrel*, the destination of the *Petrel* being China. My wife and I agreed that she should sublet our apartment if she could, and join me in California or later in Japan.

That evening about nine o'clock I noticed that a lady and gentleman, sitting in the section opposite mine, had a number of small packages, and were somewhat embarrassed by them, when the porter came to make up the section. So I said to the man, "Won't you sit in my section while yours is being made up? I'll go to the smoking-compartment." Later that evening he thanked me, and I said:

"Oh, I was very glad to help you out a little. I saw that you and your wife seemed to be somewhat crowded with your baggage."

"She is n't my wife," he answered; "she's my sister."

I was introduced to her the following morning as Mrs. ——. During the forenoon I found myself talking with her at one of the stations in Canada, and she thanked me also. I said:

"Oh, I told your brother this morning that I was very glad to do you that little service."

"Why, that is n't my brother," said Mrs. ——; "he is only a friend."

The *Petrel* was put into commission on December 16, 1896. Our work of getting ready for sea was carried on in such a leisurely fashion that we did not leave the

navy-yard until the latter part of February, and after that we swung around our anchor in San Francisco Bay, off the beautiful and picturesque town of Sausalito, till the early part of April. We looked forward to three years of cruising in China and Japan, just as other ships had been doing for many years, and to nothing else. We did not know that we were to take a part, and a very prominent part, in one of the most decisive battles ever fought. In fact, even as late as the latter part of 1897 there was no clear idea or expectation that the United States would ever go to war again. The same feeling was over the country as had been over many other countries at different stages of their national life—that war was “a relic of barbarism,” and a disease for which the cure had been found.

My wife and little daughter joined me at Vallejo, and we lived at the same hotel where I had played billiards as a midshipman twenty-two years before. Vallejo did not look so interesting to me in 1897 as it had in 1875. The streets seemed narrower and muddier, and the houses dingier. But the same wonderful moonlight appeared sometimes, the same magnificent range of mountains could be seen, the same invigorating air could be breathed, and the same startling sunset colors appeared behind Mount Tamalpais, and were reflected in red and gold in the waters of the bay.

Finally the little *Petrel* stood bravely out of the Golden Gate into the waters of the Pacific. A southeast gale was blowing, and the water was very rough on the bar. The youngest member of the wardroom mess of nine was Assistant-Paymaster Seibels (“little Georgie Seibels,” we called him), who had just entered the navy. For some reason he was much afraid of being seasick, and our executive officer, Lieutenant Hughes, who was a typical sea-dog, would amuse himself sometimes by giving Seibels a realistic description of its horrors. When the *Petrel* started over the bar, she began such a series of athletic performances that Seibels became much con-

cerned. But Hughes became much concerned also, for he was one of those men who never recover wholly from sea-sickness. After the performance had been going on about an hour, and Hughes's face had acquired a pale green-yellow tint, Seibels, smoking a big pipe, came up to him. At this time many people were very sick indeed, but Seibels was not. He was so concerned, however, that he did not notice anything except his own feelings, and they did not seem especially distressing. Finally, after about an hour of waiting for something to happen, and not noticing any signs of it, he went up to Hughes, saluted him, and said, "Excuse me, Mr. Hughes, but will you please tell me when a man begins to feel sick?" Poor Hughes looked at the ruddy face of Seibels and the big pipe, and smelt the nauseating tobacco-smoke. "Go — —!" he said, and walked unsteadily to his room.

I had my sounding-machine ready, and we soon began to take soundings with it. The quartermaster on the poop would pull back the brake with a lever whenever I raised my hand. This would permit the drum of the machine to revolve, and the wire on which was hung the lead to unreel. At the same time it closed an electric circuit, and started a specially constructed clock, which was graduated not in hours, minutes, and seconds, but in fathoms and fractions of a fathom, and which I had installed in the pilot-house. When the wire slackened, showing that the lead had hit the bottom, the quartermaster would let go the lever. This would let a stout spring apply the brake to the drum, and at the same time open the electric circuit and stop the clock. Then I would read the depth on the clock, and the quartermaster would reel in the wire again in readiness to take the next sounding.

The scheme worked perfectly; the soundings indicated exactly what the chart showed. But suddenly the wire broke. This was an unexpected calamity and a great one; because I did not have another wire with which to replace it. I thought I could get one, however, in Hono-

lulu, whither we were bound. When we got there, however, I could not find any wire of the proper kind, and I could not later in either Japan or China. From an unfortunate combination of circumstances I was not able to get the proper kind of wire until late in the year. At that time we were in inland waters near Hong-Kong, and I could not get any chance to try the machine. Then we went to the Battle of Manila, and I had to take the machine off the deck and store it below. Later, I was transferred to the Monitor *Monadnock*, and I put the sounding-machine at the after end of the quarter-deck. Just then the Filipino War broke out. Then I got two quartermasters with hand-spikes, and they shoved the sounding-machine overboard into the waters of Manila Bay.

This was the end of a machine on which I had worked at intervals for twelve years. I have occasionally made up my mind at intervals ever since to undertake again the work of developing it; but my regular duties and other inventions and undertakings have distracted my attention from it. *One cannot develop all the inventions which his mind suggests.* I wish that some one would develop a sounding-machine which depends on timing the sinking of a weight.

A pleasant trip, made mostly under sail, took us to Honolulu. My wife and daughter had preceded me, and I found them at the Royal Hawaiian Hotel. On approaching the hotel, I looked with interest at the steps whereon I had slept in full-dress uniform twenty-two years before.

On my way to the hotel I passed a lady driving on one of the principal streets, whom I recognized as Mrs. —, who had been in the same car with me on the trip from New York to San Francisco. She was very polite to my wife and me, and invited us to dinner one evening.

My wife and daughter preceded me to Yokohama, and they came on board in a sampan shortly after we ar-

rived. They were charmed with Japan, and, as I found afterward, with good reason. They were comfortably established at the Grand Hotel, and the shops of Yokohama, the strange costumes, the strange customs, the picturesque scenery, which included Fuji-yama at times, the jinrikishas, and the cheapness of everything, combined to make a delightful living place, especially in the month of May, which was the month of our arrival.

During the time of our stay in Yokohama I saw there was a great feeling against the Japanese held by the English. It expressed itself in many ways and on many occasions. It was evidenced by very harsh criticisms of the actions of the Japanese, even the Japanese of the coolie classes, and it was expressed not only in conversation, but in the newspapers. One curious phase of this was continual ridicule of the Japanese for "throwing away" certain moneys which they had received after their war with China. The most extreme predictions were made as to the ruin which would fall on Japan because she did not save her money instead of squandering it on the army and navy. The people who made these criticisms of the Japanese were important business men, and it seemed strange even to me that they should be so blind, when it was perfectly obvious that the relations between Great Britain and Russia were so strained that it was to the advantage of the English that Japan should be well armed. Only seven years later Japan took Great Britain's job of thrashing Russia, and used for that purpose the ships which were purchased with the money which these Englishmen had ridiculed Japan for spending.

In the latter part of May the *Petrel* started on a cruise which was to include the Inland Sea of Japan, Chemulpo in Korea, Chifu in northern China, Shanghai, Fu-chau, Swatow, and Hong-Kong.

Our cruise through the Inland Sea was delightful, but I shall never forget one foggy night, steaming among

the rocks that guard the approaches to Nagasaki. After a few days there we went to Chemulpo, where we arrived on June 13, 1897, my forty-third birthday.

We remained in Chemulpo for three months, a very monotonous three months indeed. The climate was magnificent, but I have always noticed that wherever there is a good climate, there is nothing else that is good. People seem to prefer bad climates, as is shown by the fact that every great city in the world is in a bad climate, or at best a climate far from good. The scenery from our anchorage included long stretches of clear blue water and rugged hills and mountains in all directions. I do not think I have seen such clear air anywhere else as in Korea. The town itself was of that kind of interestingness which anything having a distinct and peculiar character possesses; but after one day's acquaintance with it, interest ceased altogether, so essentially uninteresting was it.

There is a tremendous rise and fall of tide at Chemulpo. When the tide was high, it went up to the water-front of the city, and the city looked rather picturesque from the ship; but when the tide was low, the edge of the water was virtually a mile from the city, and immense areas of yellow mud were disclosed. When one landed, he had to walk up a considerable hill toward the town, along a steep road which was always well filled with laborers and beggars. I have never seen men carry such tremendous loads as in Chemulpo. Each laborer had strapped on his back a kind of contrivance such as a chair would be, if it were strapped on a man's back, with the back of the chair and the rear legs in contact with his body. The load was placed just where it is in a chair. I do not remember now what weights they carried, but I think I am correct in saying that an American merchant told us at mess one evening that a few days before a laborer had carried five hundred pounds from the water-front to the town up the hill a distance of a quarter of a mile.

During our three months' stay at Chemulpo we got into the habit of going ashore Saturday afternoon and walking about the town. This was our only diversion there, for the political conditions were such that trips into the interior were not advisable, and swimming was too dangerous on account of the swift tidal currents.

But one afternoon the captain, the paymaster, and I proceeded in the captain's gig to a cove about a mile away, where the water had very little current. Before going, we put on our bathing-trunks under our clothes, so that we could disrobe in the gig and jump into the water. This part of our program worked very well, and we had a delightful swim; but suddenly a tremendous rain-storm came up, without any previous indication whatever, and immediately drenched the clothes we had left in the boat. The rain was a cold one, brought up by a cold wind. Our plight was uncomfortable and ridiculous. We stayed in the water, which was warm, waiting for the cold wind and rain to pass by. But after we had stayed in the water until we were tired, and saw that the wind and rain had no intention of stopping, we made up our minds to get back to the ship as best we could. So we crawled into the gig in our bathing-costumes, and the men "gave way" with a will while the captain, navigator, and paymaster crouched in the stern of the boat, virtually naked, shivering in the cold wind and rain, which continued to pelt us. We got alongside of the ship just as the supper-hour was over, and all the men were congregated about the deck under the awnings. Certainly we created an undignified and ludicrous appearance as we came over the side to the deck and ran aft. The captain led, weighing about 120 pounds; the navigator followed, weighing about 130 pounds; and the paymaster followed, weighing 200 pounds. A little titter went from the men at first, which finally burst into an uncontrollable guffaw.

One day *The Scientific American* came on board, containing an article of great interest to me, which an-

nounced the discovery of a simple appliance that made possible the attainment of what many people, of whom I was one, had been attempting—wireless telegraphy. *The Scientific American* described and illustrated this appliance, later called “Bramly’s Coherer,” the resistance of which was instantly reduced by being hit by a Hertzian wave, but which could be restored at once by a slight tap. After reading the description, it occurred to me at once that by sending out Hertzian waves of different frequencies, different apparatus at a distance, having vibration periods equal to those of the waves, could be operated. It also struck me that, if only two different instruments at a distance were used, it would be easy to operate either one at will without interfering with the other one. As I was one of the few officers of the navy then who believed in the torpedo, I thought I saw a way of overcoming the principal difficulty with a torpedo—the difficulty of making it go straight in a horizontal plane. So I sketched out that afternoon a simple electrical scheme, which is, I believe, at the bottom of all the schemes for using wireless telegraph for directing distant objects, that have been proposed and used since then.

I sent this diagram with an appropriate description and a letter to Mr. Thayer, manager of the Western Electric Company in New York, saying that if the Western Electric Company would patent this in my name, I would assign the patent to the company on any reasonable agreement; and adding that, while it was somewhat ahead of the times, yet, nevertheless, there was in it, I thought, the possibility of considerable future usefulness.

About three months later I got an answer from Mr. Thayer to the effect that he had submitted my proposition to Mr. Barton, the president of the company, and that Mr. Barton had replied that, while the Western Electric Company was very desirous of advancing the applications of science, and especially its applications to

the navy, yet that this particular proposition of mine seemed a little too far beyond practicability to warrant spending any money on it. This answer was not unexpected, and I had so much confidence in the judgment of Mr. Thayer and Mr. Barton that I gave up my notion.

In the following June, about a month after the Battle of Manila, I got a letter from Mr. Thayer, saying that on the second of May he had received a telephone message from Mr. Barton, in Chicago, telling him to take out the patent for Lieutenant Fiske and to do anything else that Lieutenant Fiske wanted him to do. So I prepared a patent application and other papers, and sent them to the United States. When I got back to New York in February, 1900, I found that the application had not yet been granted, but that a patent had been granted to Nikola Tesla for a virtually identical scheme. Correspondence with the Patent Office disclosed the curious fact, which the Patent Office admitted, that they had made the mistake of issuing a patent to Tesla while another application for the same thing was being considered in the office. The Western Electric attorneys finally made an arrangement with the Patent Office whereby I was granted a patent that underlay Tesla's, although of a later date.

My patent was dated October 23, 1900, and expired October 23, 1917. During all the seventeen years I never saw my way clear to applying it in practice, not because I did not see my way to applying it to steering one torpedo or vessel, but because I did not see my way clear to applying it to steering several simultaneously. During those seventeen years, I saw scores of notices of people inventing the scheme, sometimes in the United States and sometimes in Europe; occasionally I was mentioned as the inventor, but usually somebody else. The only man I know of who has really accomplished anything in this line is John Hays Hammond, Jr. I have always given Mr. Hammond a great deal of credit, both in private conversation and letters and in print, for the

excellent work that he has done, but I do not know of Mr. Hammond ever giving me credit for having suggested the plan originally, or of his disclaiming the credit given him for it in many accounts of his achievements.

One morning we were extremely surprised by the arrival of three German men-of-war. We were not surprised so much by their arriving as by the fact that they arrived so early as to show that they must have come up the long and dangerous approach to Chemulpo during the night. At this time the German Navy was not highly regarded. In fact, it was rarely thought of; but this performance startled us into a recognition of the fact that the German Navy must be of a high order of efficiency, for otherwise this act would not have been performed or even attempted. Each of these ships was much larger than the *Petrel*, and yet we had been careful to come up by daylight and with the greatest circumspection. I noticed also that the German ships had on their topmasts a system of signals almost identical with the one that I had completed just before I left home, and which had been put into the *New York*, except that it had three pairs of arms instead of four.

Since that morning in Chemulpo, when those three ships met my astonished gaze, I have kept my eye on the German Navy.

During our stay in Chemulpo my wife and little daughter had been living in Yokohama, with occasional trips to Tokio, Kioto, Nikko, and other charming places. As my wife was a pianist and my daughter a violinist, they naturally drifted into the musical set, and took part in many concerts. On one occasion the little girl played two solos in a public hall for a charitable purpose, besides playing an obbligate for Mr. Morse, who was then the favorite tenor in China and Japan.

About the first of September they left Yokohama, and after a delightful trip through the Inland Sea arrived at Chemulpo. I met the steamer with the whaleboat of the

Petrel, and took them ashore. I steered the whaleboat myself on the trip in, and became so much interested in conversation with them that I ran the boat aground. As I was the navigator of a United States vessel, this was almost disgraceful, and I heard good-natured references to it afterwards from time to time from members of the wardroom mess. I was able to back the boat off, however, and to get my wife and daughter to the Hotel Dai Butsu. They stayed there for perhaps a week, and my wife has often since declared that the Hotel Dai Butsu was the worst hotel in the world.

At that time the Koreans had the reputation of being the most abject cowards living. One night Dr. Brownell, Ensign Fermier, and I went to the British consul's residence, where there was a small entertainment because of the birthday of the queen. While we were walking back to the boat we were followed by a crowd of Koreans. This became annoying after a while, and Fermier said, "I'll stop this." Then he turned around quickly, stretched out both arms, and ran at them shouting something emphatic; whereon the whole crowd ran off in all directions. Shortly afterward my wife and daughter were followed by a crowd of Koreans in Seoul, the capital of Korea; but as soon as she turned round and brandished her parasol at them, they ran away. About that time an Englishman went on board a small steamer at Seoul in a sampan, or little boat. He paid the boatman something, but the boatman protested. The Englishman went on board, stood on the starboard side of the steamer, and listened to the boatman, who held on to the side, with his face level with the deck. Standing alongside of himself on deck, the Englishman saw a Japanese: and as he could not understand the boatman, he asked the Japanese to translate for him. The Japanese said it was not necessary, and kicked the boatman in the mouth. The boatman made no further protest, and pulled his boat ashore.

I had been having trouble with an ingrowing nail on

my left big toe since 1875, when I tried to wear a pair of shoes as small as Dorn's. Our surgeon, Dr. Brownell, had been casting greedy looks in the direction of my toe for a long while; and now, having little else with which to amuse himself, he made a determined attack on me, to which I finally succumbed. So he took a hypodermic needle, and injected some cocaine into my toe, and then began to cut. I sat propped up in my bunk, and watched him cut down through the nail and into the toe, and then cut from another place at an angle to the first cut, and pull out part of my toe and exactly half the nail. I watched him do this as I would watch a grocer cut into a piece of cheese, and with just as much pain, but no more. When he came to sew it up, though, there was considerable pain. The pain passed away soon, and left me with an extraordinary desire to write a story, the plot of which came to me with the cocaine. So I sat up in my little bunk, with a pad of paper and a lead-pencil, and by the light that came in through my little round port wrote at the top of the page:

THE EXPLOSION OF MR. JOHN ASHBURTON

I was sitting one evening in the billiard-room of the Grand Hotel watching a game of billiards between Mr. John Ashburton and his nephew George. Mr. Ashburton had got the balls together in a corner, and was about to make a massé-shot, when he suddenly exploded. I saw him tilt forward to the table, and then roll off sideways to the floor.

I completed the first chapter that afternoon in my bunk; and for some time afterward, when we had company on board from shore, the mess would get me to read the first chapter aloud. The first chapter was not wholly devoid of novelty, but I have never been able yet to write any succeeding chapters pitched in the same key. Possibly the reason is that I have not had any more toe-nails cut out.

We left Chemulpo in the middle of September, and went to Chifu, in northern China, my wife and daughter go-

ing about the same time in a merchant steamer with Mrs. Wood, wife of Lieutenant Wood of the *Petrel*. After a stay of about a week in Chifu, the *Petrel* went south to Shanghai, and my wife and daughter went north to Tientsin.

My wife and daughter went from Tientsin to Peking, and from Peking to the Great Wall. They traveled in big red carts called "Peking-carts," which had no springs. As the roads were very rough, the absence of springs was deplorable; in fact, the whole journey up to the Wall and back to Tientsin was exceedingly uncomfortable and exceedingly adventurous. They finally got back safe, however, and reached Shanghai while the *Petrel* was still there.

The *Petrel* remained in Shanghai until November, and then went south. At this time there was a great deal of musical activity in Shanghai, and "Mrs. Fiske and Miss Fiske" appeared on most of the programs of the various concerts given. The little girl was declared to be a great violinist, and a splendid future was predicted for her.

On the way south the *Petrel* stopped at Swatow. One evening the captain and officers were invited to a dinner given by the "American consul," who was really the German consul, but in charge of the American consulate. We did not want to go at all, but the captain ordered us to go, which is the regular procedure in such circumstances, and so we had to go. The weather was not pleasant, and we expected a poor dinner and a stupid company. We found about a dozen men and a dozen ladies, perfectly dressed, and we were soon ushered into a large dining-room, where there was a table covered with bright flowers and beautiful china and handsome silverware, while the room was lined with Chinese servants in costume. We declared to ourselves later that this was the most thoroughly delightful and perfect dinner that we had ever attended. Nothing could have been more perfect in the matter of appointments, variety, ex-

cellence of cooking and attendance, than that dinner. Every kind of wine seemed to be at the temperature at which it was the most delicious, and there were as many waiters as there were seats at table. The waiters, or "boys," as they were called, were under the "number one boy," or head waiter, a magnificent creature in a magnificent dress.

The next evening we were invited to a men's dinner, given by one of the merchants in town at his residence. The paymaster and surgeon and I were to leave with the captain in the captain's gig at half past six. But when our afternoon boat came back from shore to the ship at six o'clock, the paymaster was not in it; and as it would be a crime for him to be late for the gig at half past six, some of us went to his room and got all his clothes ready, so that he could get into them quickly when he should finally arrive on board. He came alongside at exactly twenty minutes after six, standing up in his sampan as he neared the ship, in evident realization of his tardiness. The *Petrel* was rolling a good deal, and as Seibels tried to get out on the gangway, he missed his footing in his excitement, and fell overboard, though still holding on to the gangway. The roll back of the *Petrel* brought him above the surface of the water, and then we seized him and hustled him below. Then we all undressed him, rubbed him down with a towel, and dressed him; and so skilfully did we do our work that at exactly half past six Mr. Seibels appeared on deck, perfectly dressed in his uniform evening costume.

We had a pleasant dinner, and at its conclusion we went to a large room, where there was a piano. After we had seated ourselves, the host said, "The next thing on the program is a song, sung, unfortunately, by myself." Then he sang a song, and he sang it so badly that everybody afterward felt encouraged to sing himself when his turn came. So different men sang songs in different languages, and the evening slipped pleasantly away.

We found Hong-Kong a very beautiful place indeed; not the city itself, which is called Victoria, but the bay and the islands and the mountains and the general view wherever the eye could reach. We spent Christmas there, and I remember going with my wife and daughter to a splendid service in the cathedral, and seeing on the left side of the chancel, in pews reserved for officials, a dozen or more British naval officers in uniform.

While in Hong-Kong two German naval lieutenants dined with us in the *Petrel*. As the executive officer was on shore, I sat at the head of the wardroom-table, with one of these officers on each side. While they were very rude in talking to each other in German, which they knew I did not understand, they were, despite that fact, very interesting and agreeable, and displayed a knowledge of the scientific part of the naval profession which I had never seen equaled by any American naval officers in a casual conversation on board ship. My judgment in this matter may have been somewhat impaired by the fact that this knowledge consisted in part of an accurate knowledge of my own inventions, and was accompanied by an intelligent interest in them. One fact that they told me roused me greatly, and that was the fact that in the German Navy *they tried to utilize every man's peculiar gifts*. For instance, if a man had an aptitude for mechanics or invention, they encouraged him in every way to work along the line of his ability, but to devote the results of it to naval excellence. Such a man, for instance, would always be employed on shore in working at his specialty, and when he went to sea, would be sent to a ship in which he could carry on his work in some degree, and yet keep in touch with the practical work of the navy as a whole; so that he would not stray to paths outside of naval work, and his judgment would remain good as to the best naval lines along which to prosecute his special work.

This conversation startled me as much as did the episode at Chemulpo, when the German squadron came

up by night. The former instance had shown practical, seamanlike skill; the incident of this conversation showed a foresight on the part of the German Navy Department that I knew to be wholly lacking in our Navy Department, and suspected to be lacking in the British and French Navy Departments. And when, after the Battle of Manila, I saw what large numbers of German naval officers visited the wrecks of the Spanish ships, and noted the length of time they stayed on board, I came to the conviction that the German Navy was going to be as efficient as the German Army, if it was not already so; and that the time was coming, if it had not already come, when the German Navy would be the most efficient navy in the world, even if it were not the largest.

From Hong-Kong we went to Canton, about seventy miles away. More strictly speaking, we went to Shamien, a little island separated from Canton by a stream that was so narrow at one point that it was crossed by a bridge, which was pulled up at night on the island end, and let down the following morning. The island was extremely small and flat; not very much larger, as I recollect it, than an uptown city block in New York. Here resided a great many silk merchants and others, mostly from Europe, some married and some bachelors. Living there must have been very dull most the time, but we brought a little variety. Life was pleasant, however, even if it was dull, and we had never seen better dinner parties anywhere. Being at Canton, the china, of course, was perfect, and so was the service, and so was the silver, and so were the silks; and as Hong-Kong was a free port, there was no duty on wines, and the best wines were to be got at moderate expense. The net result of all these conditions, combined with the facts that the people had abundance of leisure, and that going to dinners and giving dinners was almost the only amusement, raised the art of dining and giving dinners to the position of a fine art, and made the people of Shamien well skilled therein.

The residents whom we came to know the best were Mr. and Mrs. Drew. Mr. Drew was the head of the Chinese customs in the south of China, and a Harvard graduate. Four years afterward, when we were living in New York, my wife saw a telegram from San Francisco in the paper, saying that Mrs. Drew had arrived in San Francisco, and had given a heartbreaking description to the newspaper interviewers of the atrocities committed by the Chinese at the time of the Boxer Rebellion. A week later we saw a telegram from Boston, saying that Mrs. Drew had denied to some interviewers there that she had said any such things to newspaper men in San Francisco as the papers had described her as saying. A few days later my daughter got a letter from Kathleen Drew, saying that her mother had had no interview whatever with any reporters in San Francisco or Boston or any other place, or said anything whatever to any newspaper representative anywhere.

In March, 1898, when war with Spain seemed imminent, *The Electrical Engineer*, in its issue of March 10, published an editorial on my lecture before the Electrical Society in 1890, on "The Civilian Electrician in Modern War," and advocated carrying out my recommendations. This was taken up by other newspapers, notably the New York *Evening Post*, and resulted in enrollment of a volunteer corps of a thousand men under Eugene Griffin, vice-president of the General Electric Company, an ex-officer of engineers of the army who had graduated at the head of his class at West Point. As I was at Manila during all of the Spanish War, I do not know how much real work this organization did, but I do know that the organization was the basis for much of the preparatory work of our electricians and engineers in the early part of the great world war.

In the early part of April there was a good deal in the Hong-Kong newspapers about a possible war between the United States and Spain. None of us believed that it really meant war; we could not imagine such a

thing as the United States getting actually into war. During all the time that we had been in China, Great Britain and Russia were supposed to be on the verge of war. The British ships dogged the Russian ships wherever they went, and at one time war seemed so very near that I made application to Washington for orders as observer on either the British or the Russian side. We held about the same idea regarding the United States getting into war that a person holds about dying—a thing possible only to others.

On February 15, 1898, the *Maine* was sunk in Havana Harbor, and the probability of war increased, but not to the proportions of a certainty in our estimation. Then Commodore Dewey came down from the north and collected all the squadron in Hong-Kong Bay. His ships were the *Olympia* (flag-ship), the *Baltimore*, the *Boston*, the *Concord*, the *Raleigh*, and the *Petrel*. Besides these, the revenue-cutter *McCullough* joined his flag, and he bought the collier *Nanshan* loaded with coal. Finally, on April 26, war was declared just as we were finishing painting the ships war color, and the governor of Hong-Kong ordered us to leave the harbor, because we were then belligerents.

So Commodore Dewey got the squadron under way, and proceeded to Mirs Bay, about ten miles distant. In Mirs Bay we were not in British territory, but in Chinese territory. China did not order us to leave Mirs Bay, and she would not have been able to make us leave if she had done so.

CHAPTER XVI

THE BATTLE OF MANILA

Note. This chapter and those succeeding that concern the Philippines are taken from my book "War Time in Manila," and are printed here with the kind permission of its publisher, Mr. Richard G. Badger, of Boston.

WHEN the American fleet under Commodore Dewey left Hong-Kong on April 25, 1898, and went to Mirs Bay, we did not even then feel sure that there would be war. Many of us thought that war would be averted at the last moment, and some made bets to that effect. But on the evening of April 25 the captains were called on board the flagship by signal, and we on board the *Petrel* felt that when the captain returned he would bring to us definite news of war or peace. We sat on the port side of the quarter-deck and talked for the most part on irrelevant matters, though probably every one was thinking of the news which would come in a very short time. At last we heard the call of the sentry and then the plash of oars. The captain came over the side with his brisk step, and walked quickly aft on the quarter-deck and, seeing us on the port side, thrust out his hand, in which was a telegram, and said, "Gentlemen, it is war."

Next morning we were ready very early to get under way, but the steamer with the American consul from Manila did not come until the forenoon of the twenty-seventh was well advanced, so that it was about midday when we moved from Mirs Bay in column, headed to the southward and eastward.

Probably the principal thing remembered about the trip to Manila by most of the people in the American column is the enormous quantity of woodwork flung overboard by the ships. It seemed as if the *Baltimore*, for

instance, never could possibly have held the amount of woodwork she threw over, and yet it was a common remark among officers who went on board the *Baltimore* after the battle that the woodwork was hardly missed, except the fore and aft bulkheads in the wardroom. In looking back on this little trip, which occupied about three days, I am struck with the fact that everybody seemed to take the matter lightly, and, except for an occasional remark, the conversation was such as is usual on ship-board; and it was not until a sudden screech and boom about midnight of the morning of May 1 that we realized that this was war.

The afternoon of April 30 was spent in skirting the west coast of Luzon Island toward the entrance of Subig Bay and in watching for the Spanish vessels. The *Boston* and *Concord* went ahead of the fleet to the opening of Subig Bay, and came out reporting that no Spanish ships were there. Before dark the captains were called on board the flag-ship for the last consultation. They soon returned to their ships, and the fleet, formed in column at distance, stood toward the entrance of Manila Bay, about sixty miles away.

As darkness slowly descended, the scene took on a character at once soothing and disturbing—soothing, because everything was so beautiful and so calm; disturbing, because of the grim preparations evident. The guns were all ready, considerable ammunition was on deck, and the men lay or sat or stood by their guns. As few lamps as possible were lit, and all lights which would shine outward were screened, except one small light over the stern of each ship. The night was clear and calm, and the hours from eight to twelve rather dragged. There was nothing to do, for all preparations had been made; there was nothing to see except the dim outlines of a few ships and the vague outline of the coast two or three miles distant; and there was nothing to hear except the sound of the engine and the swish of the water along the sides.

At half-past eleven, just as the fleet was about to head into Manila Bay, the *McCulloch* (revenue-cutter) threw out a flame from her smokestack. Instantly a rocket shot into the air from Corregidor Island, showing that the flame had been seen and the fleet discovered. We realized the fact that this meant a signal to Manila; but after a short buzz of conversation all went on as quietly and calmly as before. I was standing on the bridge with Hughes, the executive officer, and being somewhat tired, I yawned. Hughes turned to me and said, "Bradley, that is very impolite, and besides it is a very bad sign, because yawns in the evening mean tremors in the morning." Scarcely were the words out of his mouth, at exactly a quarter past twelve, when there came the screech and boom I have spoken of; and this cleared up the situation at once and gave everybody a definite idea of where he was and what he was trying to do. Of course the ships replied at once, firing into the darkness on the starboard side toward the flashes, which kept repeating. The *Raleigh*, under Captain Coghlan, was the first to fire; Lieutenant Babin, I think, was the officer of the poop division and fired the first gun himself. Captain Wildes, who commanded the *Boston*, steered out of the column, right toward the flashes, and opened with all his battery, and I shall never forget the appearance of that ship as seen from the *Petrel*. Her form could be only dimly outlined, except when momentarily lightened by the vicious flashes of her guns, which came in quick succession, and one could easily imagine her a war-god fighting with thunder and lightning. The attacking guns were quickly silenced, and we found afterward that they were on the little Island El Fraile, but who the gallant Spaniards were who with so little force attacked our fleet I for one have never heard.

At the time of this incident the fleet had just passed within the entrance to the bay, and the captain, Commander E. P. Wood, and I said to each other that the commodore evidently intended not to get up to the town

and the Spanish fleet until daylight, so as not to risk an attack in an unknown harbor from torpedo-boats, regular or improvised. The captain then told me to go below and get some sleep, as there was no use of both of us being on the bridge. He refused to leave the bridge himself.

I left the bridge and walked aft. By this time the men had already quieted down again. Some of them were standing in groups about the deck, and some were lying down, apparently asleep. Lieutenant Plunkett and Ensign Fermier were lying down in the rear of their divisions, seemingly slumbering peacefully, while Chief-Engineer Hall, Lieutenant Hughes, and Paymaster Seibels were sleeping on the poop. Everything about the deck was quiet and dark except for the faint light that came from the stars above and from the engine-room below. The guns were all ready, with ammunition behind them, and even the breech-blocks of some were swung open. Despite these warlike signs, however, the night was so beautiful and the stars so bright and the sea so calm that the scene was soothing and peaceful, and conveyed little idea of what we expected to do in five hours.

I walked down the wardroom-ladder, intending to go into the wardroom, but I found the water-tight door was closed. This door, of course, was shut, like all the other water-tight doors in the ship, as a precaution in case of striking a torpedo; and so I had to go on deck again and into the captain's cabin, and down the Jacob's-ladder, which was kept there to be used in cases like this. I found the wardroom absolutely dark, and when I reflected that the ship might at any moment explode a torpedo, I recognized the fact that it might be called uncanny. While such reflections were passing through my mind I was surprised and gratified by a most reassuring snore, long, deep, and regular, coming from one of the rooms. I groped my way to the door of this room and listened, to identify the snorer. It did not take long for me to

recognize the tone of our medical officer, and I marveled at his ability to sleep so soundly on such an occasion, and I envied him. Then I felt my way to my own room and lay down on my bunk. The deck above my head was distant about two feet, and I thought how very flat I would be squashed out against that deck if a torpedo exploded under the ship. This idea was very vivid at first, but I was tired and warm, and the idea became gradually less and less vivid, and finally became indistinct. But I can even now remember that the last thing in my mind before I went to sleep was how I would look if anybody saw me flattened out against that deck.

I was aroused from my sleep by a noise at my door and a voice saying:

"The captain wishes to see you on the bridge."

"What about?" I said sleepily.

"I don't know," he said, "but it is ten minutes to five, and they have begun to shoot at us."

Then I roused my dormant senses, and realized the fact that I was about to go into battle for the first time.

When I reported to the captain on the bridge, he simply smiled and said, "All right." I looked ahead in the dim morning light, and saw the *Olympia*, *Baltimore*, and *Raleigh*, and ahead of them a great number of masts that looked very indistinct. I heard the sound of one or two very distant guns ahead and saw their smoke. "The Spanish fleet is over there," said the captain, pointing over on our starboard side; and there could be discerned a few indistinct shapes that looked like ships. All the men were congregated about their guns, and the guns were loaded. A few were getting some coffee and crackers at the galley, and the scene about the deck was as quiet and peaceful as I had ever seen it.

I had always thought that the position of the captain of a ship in a fight should be where he could see, and I had spent a great deal of time in trying to devise a practical observing-station. But there was not even a conning-tower on the *Petrel*, so, before leaving Hong-Kong,

I had asked and received permission from the captain to rig up a platform on the foremast, about forty-five feet up, where I could sit with my stadimeter, above the smoke, and measure the range of the enemy, and also inform the captain of whatever important incidents or movements my clearer view might enable me to see. I had roped this platform round, so that I should not fall overboard, and had arranged that the navigator's writer Howard should be with me as assistant. I told him the day before the battle to take up to the platform two life-preservers and a rope strap, the life-preservers to be used in case the mast was shot away, and the strap to be put under the arms, so that one of us could be lowered, if hit.

Howard and I started up the rigging together, and I remember saying to myself as I was going up, "I wonder if I shall come down with the same deliberation." When we had seated ourselves on the platform and I had adjusted the stadimeter for use, it was a little early for work, and so we occupied ourselves with a look at the scene. There was pretty good light now, and we could see that the masts ahead were the masts of merchant ships; and behind them we could see the white domes and towers and trees of what seemed the most beautiful city we had ever seen. A lovely sheet of water, blue and tranquil, spread upon all sides; and behind us rose the great Island of Corregidor, and to the northward and westward the lofty mountains of Luzon. To the right—that is, to the south—the land was lower; and there, standing out in clear relief against the bright blue sky, were the awe-inspiring forms of the ships of the Spanish fleet.

The *Olympia* turned to the right and headed toward them. The *Baltimore* followed, and then the *Raleigh*. I picked up the stadimeter, with no very light heart, and put it to my eye. Just then a shell, coming apparently from the direction of the city, struck the water close to the *Petrel* and exploded, throwing up an enormous quan-

tity of water, which drenched us on the platform, forty-five feet above. My assistant was a man whom I had always remarked for his extraordinary imperturbability, and for some days previous to the fight I had caught myself wondering whether his imperturbability would stand the test of battle; but I was at once reassured upon this point, for as he wiped the salt water from his face he said with his customary solemnity, "That was pretty close, sir."

The Amerian fleet turned down toward the Spanish fleet, personally directed by Dewey, and the *Olympia* soon opened with her eight-inch guns. The other ships followed as they came in range, and soon an earthquake under me showed that the little *Petrel* was taking her turn.

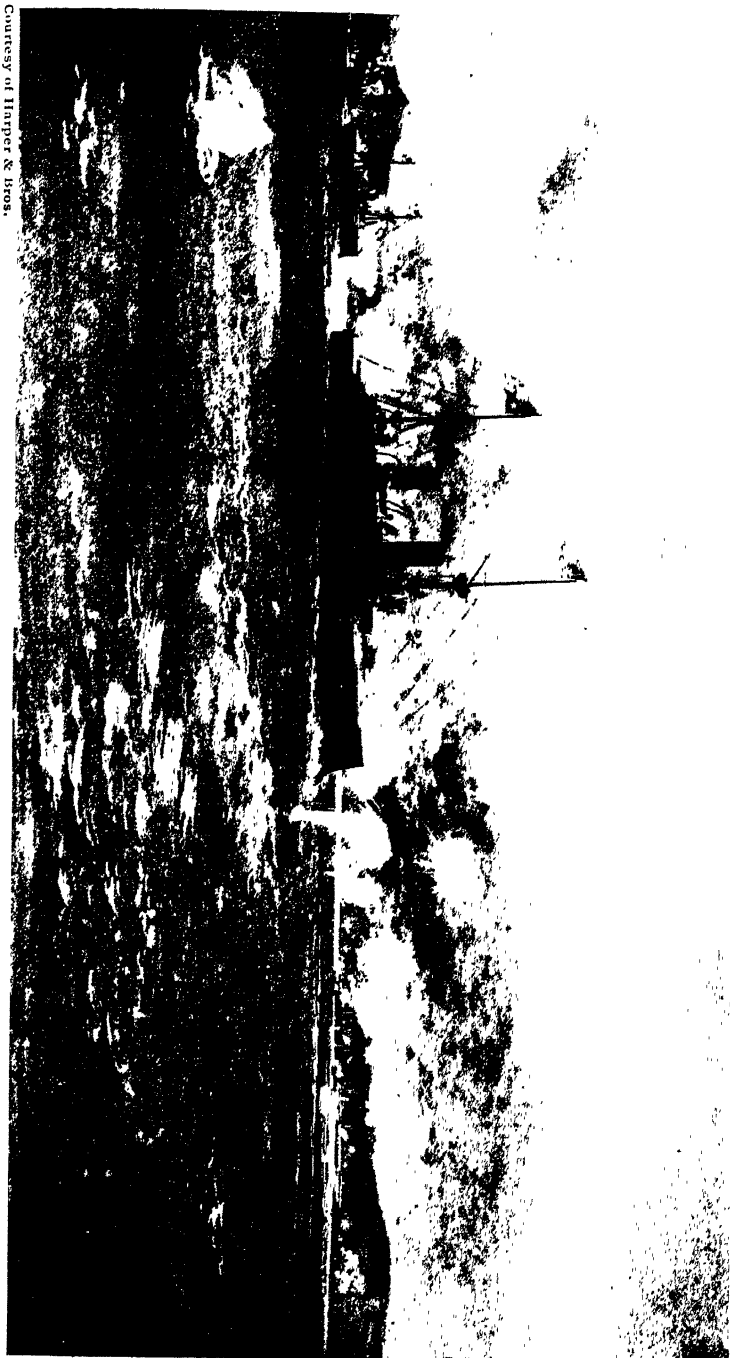
As is well known, the American fleet paraded back and forth before the Spanish fleet, firing as rapidly as they could with proper aim. To me, in my elevated perch, the whole thing looked like a performance that had been very carefully rehearsed. The ships went slowly and regularly, seldom or never getting out of their relative positions, and ceased firing at intervals only when the smoke became too thick. For a long while I could not form an opinion as to which way fortune was going to decide. I could see that the Spanish ships were hit many times, especially the *Christina* and *Castilla*; but then it seemed to me that our ships were hit many times also, and from the way they cut away boats from the *Raleigh* and from other signs, I concluded the *Raleigh* was suffering severely. I could see projectiles falling in the water on all sides of all our ships.

I was directly over one of Plunkett's guns, and saw one shot take effect; and that is the only shot of all those I saw that day which I could follow. But I happened to see that six-inch shell in the air like a black dot between me and the *Castilla*. Then I saw it strike almost in the middle of the target and throw out flame and smoke, and I wondered how many men it killed and maimed. About

the decks of the *Petrel* things were entirely different from what I had expected. I had seen many pictures of battles and had expected great excitement. I did not see any excitement whatever. The men seemed to me to be laboring under an intense strain and to be keyed up to the highest pitch, but to be quiet and under complete self-control, and to be doing the work of handling the guns and ammunition with that mechanical precision which is the result we all hope to get from drill.

The captain stood on the bridge beneath me, and it was extraordinary to see this man (he was one of the most nervous men I had ever seen) so absolutely composed and unnervous. He afterward told me that during the entire battle he had not had a single physical sensation. He was not a strong man physically, and had been on deck all night and much of the day before, and yet he went through the tremendous strain and excitement of the fight without, as he said, knowing that he had any sensations or nerves at all. I understood this to mean that his mind was so centered on what he had to do that he himself was only one of the things he had to manage, and that he was no more interested in that thing than in the other things.

Two of the ships in the Spanish column were evidently much larger than the others, and I instinctively measured the distance from them; and the gunners in the ship and the captain seemed naturally to direct the fire at them. I could see also that the Spaniards directed their firing principally at the *Olympia* and the *Baltimore*, which were our largest ships, and I felt quite confident, after a while, that the *Petrel* was not given so much attention as the rest of the ships. Of course I do not know whether the commanders-in-chief of the two fleets had given orders that this be done, or whether the mere prominence of the larger ships attracted the attention of the gunners. I became certain, however, in my own mind, that in any fleet action the natural impulse of everybody will be to fire at the most prominent ships.



Courtesy of Harper & Bros.

BATTLE OF MANILA

I realised that, in most cases, this would not be the best distribution of firing, and therefore the natural tendency would have to be counteracted by specific orders.

I think everybody was disappointed at the great number of shots lost. Our practice was evidently much better than that of the Spaniards, but it did not seem to me that it was at all good. There was no question in my mind that the two principal causes were the uncertainty about the true range, and the fact that each gun captain felt it was incumbent upon him to fire as fast as he could.

I measured the ranges, or distances, by means of the stadimeter, an optical instrument of my invention, first setting the instrument at a certain graduation, which represented the height which I estimated to be the height of the ship we were firing at. The distance which the stadimeter then indicated, I shouted to the captain, who then ordered the gun-sights to be set at that distance. At first our shots fell short. I then set the instrument at a graduation representing a greater height of mast, which caused the instrument to indicate a greater distance, and the shots to go farther. After a few trials I found the correct setting for the stadimeter, and after that the shots grouped around and on the target in a satisfactory way.

As regards the guns, the captains fired too rapidly, I thought. My impression on the day of the battle was that the fault of too rapid firing was not to be blamed so much upon the gun captains themselves as upon the people who surrounded them, principally the division officers. I felt sure that a gun captain sometimes fired in a spirit of desperation, and just trusting to luck, when he could not get his sights properly to bear, simply because he felt that the division officer was getting impatient.

I looked to see if there were any signs of skulking, but I saw absolutely none. On the contrary, it seemed to me that people exposed themselves more than was necessary, and I noticed that when their duties called Hall

and Wood on deck, they remained there longer than seemed to me to be absolutely required. In fact, I was glad to see that there was a strong desire on the part of many who had stations below to come on deck and get the feeling of being "in it." Certainly a dozen times I saw some of them come rapidly up the ladder to the deck, as if they had important business there, and then get over somewhere on the side engaged and watch the fight; and I could not help thinking at the time what a pity it would be if one of those men should have something shot away when he was simply obeying the impulses of a self-forgetting zeal.

Almost the first thing I remember after I got on deck was Ensign Montgomery, the signal officer, trying to read a signal, and then reporting it to the captain. I think the signal was "Prepare for action." At this time there was a breeze, and the flags blew out fairly well; but later on the flags hung up and down like rags; and although the ships were well closed up, it was impossible to read them. The smoke did not prevent the reading of the signals except at intervals. I noted this fact carefully.

After some time—I do not know how long—it became evident that the Spanish fleet was suffering very badly, especially the two principal ships, and I remember reporting to the captain that one of the ships had not fired a shot in fifteen minutes, when that ship then fired a shot which came very close to us. I also remember reporting to him that the other principal ship was on fire in two places. It was not long after this that Commodore Dewey withdrew the fleet out into the bay and sent the men to breakfast. I looked at my watch at this time; my recollection is that it said half past seven. It seemed to me in a vague way that it was about two o'clock in the afternoon, and I said to my assistant, "It is very unfortunate; I must have forgotten to wind my watch, and it has stopped at half past seven." I then looked at it again carefully and saw that the watch had not stopped,

and I afterward found that the watch was indicating correctly. So, although my attention had been on the alert, and time could not be said to have dragged, it seemed to me that I had been up there for hours, and I went down to the deck with a feeling of weariness and relief. The position had been rather trying. There was not enough going on in my immediate neighborhood to distract my attention from personal danger. I could see the smoke of every Spanish shot fired, and I think I heard the whistle of every shell; and I was glad to get down on deck, where other people were, and feel their comforting companionship. This leads me to reflect that, while history shows that naval fights are not so dangerous as army fights, yet a man fighting on board a ship is under a greater nervous tension than a man fighting on shore. A man fighting on board a ship must remain in almost one place and perform his very precise duties, such as serving a large gun and sighting it in the midst of terrible noises; while a man on shore can relieve his nervous tension by moving about, running or walking, and frequently firing his musket, and his nerves are not shaken by the concussion of such tremendous guns as are on board ship.

The first thing to do after getting out into the bay was to count the ammunition left. As I remember it, we had expended about one third of our entire supply. After this I went into the wardroom, where the mess were gathered over a very satisfactory meal of sandwiches, coffee, and beer. Some one said, "Sit down, Bradley," to which I replied that I would as soon as I washed my hands. With that one of them caught hold of me and said: "No, you won't wash your hands; no one is allowed to wash his hands. We don't go into battle every day, and we are not going to wipe off any of the smoke and dirt."

After coming down from aloft my attention had been engaged in the counting of the ammunition, and yet I had a question on my tongue continually, which I felt loath

to ask; it was how many in our ship had been killed. My astonishment was great when I heard that no one had been killed, and no one had been wounded. To this I answered that the *Petrel's* small size must have saved her, because I knew the *Raleigh* must have suffered severely. Then some one said that "there had not been a man killed in the whole fleet, and comparatively few had been wounded." It was a long time before I could adjust my mind to believing this, for although I could see from aloft that the American fleet had got the better of the fight so far, yet I had seen so much havoc wrought on the Spanish ships, and so many of their projectiles fall near us, that I could not believe for a long while that there could be so few casualties in our ships.

Expecting that we would be very busily engaged later on in the day, I lay down on my bunk to rest and try to get a little sleep; but I had not been long there when I heard sounds of terrific explosions in the distances, and the voices of men on deck calling, "They are blowing up their ships."

The captains of our ships had been summoned on board the flag-ship by signal, and some time, I think, about eleven o'clock they returned to their ships. Our captain brought back with him Captain Wildes of the *Boston*, for the *Boston* had no boats left that she could use. Our captain told us that we were to start in at once, the *Baltimore* leading, to engage the shore batteries around Sangley Point as well as the Spanish ships; and that, as soon as it could be done, the *Petrel* would be sent in close to do whatever was necessary. To most of us it seemed that our interesting time was coming; that is, the time after we should go into the arsenal, which our light draft of water permitted us alone to do. None of our ships had as yet been struck by a torpedo, but the water near the arsenal was only from two to four fathoms deep, and we reasoned that this was exactly the place where the Spaniards would plant torpedoes. Now, torpedoes we considered the greatest danger.

In obedience to signal, the *Baltimore* at once got under way and steamed rapidly in toward Sangley Point. She seemed to be going at full speed, and as soon as the guns of her batteries could be used she began to fire. Her appearance as seen from my perch aloft was dramatic and picturesque in the extreme. With her great size and rapid speed, she seemed literally rushing on the foe, and when she began to strike out with those long guns, I got a realizing sense of force in motion that I had never had before. The beach seemed to be torn up with the impact of her shells, and the air there to be filled with clouds of sand and the smoke and the flames of burning powder. The batteries could not stand this very long, and soon gave up the fight.

Our rôle of the interested spectator was soon ended by the expected signal to go in after the *Baltimore*. We engaged first a vessel which afterward proved to be the *Don Juan d'Ulloa*, and we fired on her for a long time without seeming to do much damage or eliciting any reply. We afterward found that the ship had been abandoned, and that, while our projectiles had pierced her many times, they had not really inflicted on her any great injury. One shell, however, went over to the arsenal, and went through the commandant's house—as we heard afterward—and passed through the dining-room, where a number of people were together. The result was the immediate hauling down of the Spanish flag and the hoisting of the white flag. As soon as this was known aboard the flag-ship, she hoisted the signal long expected by us, "*Petrel* pass inside." This signal was shortly followed by another to us to burn the Spanish ships.

During the time of the withdrawal of the American fleet the Spaniards had run their ships as close in as the depth of water permitted and abandoned them. We supposed, of course, that they had laid trains to their magazines, so that the task of burning them would be by no means a safe one. The captain at once told the executive officer, Hughes, to go and burn them, and called for

volunteers. The call for volunteers was immediately answered by a chorus of voices, the first voice being that of a seaman named Sprong, who called out instantly, "Here 's one."

The *Petrel* had anchored near the long stone bastion of the arsenal, but from that position we could not see the Spanish ships that Hughes went in to burn. The consequence was that soon after he started off he was lost to sight behind the bastion. I immediately went to the pilot-house to consult the chart and see if it was not possible to go in still farther, to a place where we could get a good view of the arsenal and the party of Hughes. I soon saw that it was possible, and went out on the bridge to tell the captain so; but before I could suggest the matter, he said:

"Don't you think we can get in closer?" I replied:

"I know we can, sir, because I have just looked it up."

So we picked up the anchor, and steamed to the southward, to a position where our keel just cleared the bottom.

We saw a lot of good-looking tugs and launches, and what seemed to be several thousand soldiers and sailors in the arsenal grounds. The captain said he thought that he ought to get as many of those tugs and launches as he could, as they might be very useful. I replied that it would be very easy to get them. He then called for volunteers, which were very quickly got, and in a few minutes I shoved off and went alongside of the arsenal dock with half a dozen men. I never had at any time during either the Spanish or the Filipino War the slightest trouble with the men in pushing them ahead, but always trouble in holding them back. On this occasion as I went alongside of the dock I had to reiterate my order to remain in the boat and not load their muskets.

I got up on the stone dock and looked about me. I had scarcely done so when I saw advancing toward me a large number of Spanish officers. I should say from

recollection at least twenty-five. Behind them, farther up the dock, was what looked to me like a small army of soldiers drawn up in regular formation under arms, and a crowd of some hundred sailors, who did not seem to be in any formation whatever, but walking about as they pleased, though armed. I advanced toward the officers, and they advanced toward me, and we exchanged most punctilious salutes. We tried to talk in English and Spanish, but they could not talk English well enough, and I could not talk Spanish well enough; but I managed to get along fairly well with one of the officers in French.

The Spanish officers seemed to be somewhat excited, and they asked me questions that I could not at first understand; but finally I found out that there were two principal questions: one was whether the firing from the American ships would begin again, and the other question was whether they would be permitted to go back on board their ships, which they had abandoned in such haste that they had left behind them their pocket money, the pictures of their families, and all their clothes. In reply to their first question, I told them that the Americans had recognized their white flag, and that they would not fire again at the arsenal, but would respect their white flag so long as they, the Spaniards, respected it. This statement seemed to gratify them, and they all cried out, "Americanos siempre caballeros." * To this I replied, "Siempre." To the other question, whether they could go on board their ships and get their belongings, I replied I had not the authority to give them that permission; but that I had a boat there, and if any of them wished, I would allow them to take it and go over to the *Petrel*, and that I was sure the captain would give them permission. My remark seemed to strike them queerly, for they half smiled and remarked that they did not care to take advantage of my kind offer. I then said, "Very well; I will go over myself and ask the captain and come back and tell you what he says." I did this, and

* "Americans always gentlemen."

soon returned to the arsenal with the captain's permission. They were awaiting my reply, and when I told them that the captain gave his free permission on the condition that none of them would attempt to put out the fires on board their ships, they seemed much pleased, and some of them said again, "Americanos siempre caballeros." Now, the peculiar ending of this incident was that, although there was a number of small boats at hand belonging to the arsenal, not one of these officers went to a ship or took advantage in any way of the permission they had requested and received!

My men were soon engaged in the work of clearing away the fastenings that held the tugs and launches, and for some reason that I cannot now remember this work was not easy. Seeing a number of Spanish sailors congregated about, looking on with languid interest, I told a couple of them to help. This they did without any objection, and I soon had a number of our enemies pulling and hauling and working away like good sailors. The consequence was that in an hour or two I was going back to the *Petrel* with two large tugs, three steam launches, and some smaller boats.

By this time Hughes had returned to the *Petrel*, having with the assistance of Ensign Fermier fully carried out his dangerous work, and the rest of the fleet was well out in the bay. Then the *Petrel* steamed up toward it, towing our prizes. At nightfall the whole fleet started towards Manila city, lighted on our way by the brilliant flames of the ships of our conquered foes.

The events just narrated seemed at the time perfectly natural and to be expected. When the battle was over, we did not feel that we had done anything wonderful; and I do not believe that anybody in the fleet appreciated the fact that the Battle of Manila was one of the most important battles that had ever been fought in any country or in any age, and would be recorded in history as one of the "Decisive Battles of the World."

CHAPTER XVII

AFTER THE BATTLE

SHORTLY after the *Petrel* anchored near Manila city with the fleet, the men went to supper, and the officers went to dinner. The talk all over the ship was mainly about the battle. All were surprised at the small loss in the American ships, and all agreed that the reason was that most of the enemy's shots went too far or else too short; because the sea between us and the Spaniards had been covered with spouts of water thrown up by their falling shell, and so had the sea beyond us, and our ships were so close behind one another that any Spanish shot that had gone to the proper distance would have been almost sure to hit some ship, even if it had gone to the right or the left of the ship aimed at. Of course we had known for years that the real reason why ships are not hit more in battle is because shots go too far or too short, but this object lesson stamped the fact deep in our minds. It stamped the fact so deep in my mind that now it seems almost a law of nature, and ninety per cent. of the art of naval gunnery seems to me to be the art of merely shooting to the correct distance. This means three things: first, finding what the correct distance is; second, using the proper powder and projectiles; and, third, firing the gun when it is elevated at the correct angle.

Hughes told us at dinner how he had set fire to the Spanish ships. His work must have been very trying to the nerves, because every ship had a great deal of powder in it, and it was only to be expected that the Spaniards had made arrangements for blowing the ships up; so that every man felt that the next instant he might

be hurled high into the air, the members of his body torn apart, and mixed with flying masses of steel and wood and brass. Hughes said that the thing which shook his nerve the most happened when he was in the wardroom of the *Isla de Luzon* alone. Hearing a slight muffled sound, he turned around quickly, and saw coming out of a room close to him a big, naked black man. This man was shaking with terror, however, and almost in a state of collapse, so that he was clearly not a bogy man, but ordinary flesh and blood. Hughes recognized the fact that we had no use for prisoners of any kind, and so put him ashore at once. No sooner did the man's feet strike good, dry ground than he sprang forward and ran away, like the frightened savage that he was.

Hughes brought with him from the *Isla de Cuba* a pathetic object, a wounded little monkey that one of his men had found down in the engine-room. The men had heard the cries of some little animal coming from below, and following the cries, they had gone to the engine-room, which they found almost full of water; and there, just showing above the water, they saw a bleeding monkey's head. On trying to rescue him, they found that he was held by a belt around the waist to a chain, and that this chain was secured to some part of the engine-room. The monkey had got as far up as he could, and if the water had risen a little higher, he would have been drowned. In some way his nose had received a violent blow that had cut through the nose bone, and it was bleeding so fast that his thin little body was like a sponge that was being squeezed. They rescued the monkey from his danger, and brought him on board the *Petrel*, where the surgeon bound up his wounds and ministered to his needs most carefully for the monkey was his only wounded patient. The men christened the monkey "Alfonso the Last," and he was always known afterward as Alfonso.

He was different from any other monkey we had ever seen. Most monkeys are interesting, but they are so

mischievous and dirty that they soon become nuisances; while Alfonso was as quiet and nice as any other pet, and as affectionate as a puppy. He came to have his own particular chums in the ship, but divided his innermost affections between Hughes, the executive officer, and Hart, a quartermaster. He used to like to go to sleep under Hughes's blouse, in the warm afternoons on the poop, and next to this, his particular delight was to go to Hart and have him blow tobacco smoke down his throat. A few months later one of the sailors took Alfonso ashore in Hong-Kong, and they both got very drunk at the Victoria bar. Some mate of a merchant ship took advantage of this, and stole Alfonso, and took him on board his ship; but the men of the *Petrel* sent a message to the proprietor of the bar that if Alfonso was not found, the Victoria bar would be boycotted by all the sailors of the American fleet. Alfonso was brought on board next day.

The evening of May 1 was calm and beautiful; there was hardly a cloud in the sky, and the stars were bright, and the water was smooth. To the south seven large red flames, rising with smoke to the sky, showed where lay the shapeless wrecks of seven ships that fourteen hours before had carried the flag of Spain and symbolized her glory. To the east we saw the city of Manila, with its electric lights and gas-lights, and its vague sky-line of spires and towers and domes and distant hills.

What was going on in that city? What was going on all along its water-front and on the Pasig River? Probably the Spaniards were making preparations for an attack upon our fleet. We did not know much about Manila, but we knew that the population was not less than a quarter of a million, and that there were many water craft of all kinds, from ocean steamers down to rowboats, including tugs, launches, barges, and floats. We knew that there must be many thousand Spanish soldiers there, and many thousand armed Filipinos who had been insurgents, but might now join with the Span-

iards to drive off a common foe. We did not know whether there were any regular torpedo-boats about; but we said to each other that the Spaniards had long known that there would be war, and that they had had plenty of time to rig up improvised torpedo-boats, and it seemed very likely to us that they would send an expedition at us that night, composed, in part, of them. Of course it would be a desperate deed, but was it not the proper time to do a desperate deed?

Our ships were ordered by Commodore Dewey, by signal, to have armed guards on deck and to keep a very bright lookout; so, on board the *Petrel*, half of one watch was kept on deck armed, and plenty of ammunition was put near the guns, and all preparations were made for getting up more from the magazines. At ten o'clock everything was ready, and everybody was tired; so, when I turned in then, it was not hard to go to sleep.

Some time later I was roused by a frightful noise. I started up in my bunk, and my stimulated senses soon told me that the noise was the clanging of the alarm-gong that called the crew to quarters in emergency. Of course I had not undressed completely, and it did not take me long to get on deck; but when I got there, I found most of the men already at their stations by their guns, and the gun captains standing behind the guns, with their eyes looking over the sights.

"What 's the matter?" I asked of some one.

"Torpedo attack, sir," was the reply.

I relieved the officer of the deck, and stepped up on the poop. There I could get a good view of the water, and I quickly saw what looked like a torpedo-boat brought out into startling distinctness by a search-light from one of our ships. A second glance showed, however, that it was not a regular torpedo-boat, but, as I remember, a white launch or small tug. Her fate was evidently sealed, for nearly all the guns in the fleet were turned on her, and she was so bright an object that the gun-sights showed clearly outlined against her. But of course, we reasoned,

the Spaniards had not sent one torpedo-boat alone; there must be others rushing toward us from other directions; and so a dozen search-light beams were sent darting over the harbor. We looked on all sides, but could not see any other boats; only the white light rays and the dark water and the dim city and the dull-red glow cast on the sky by the burning ships, except where a search-light brought into sudden vividness a ship or tower or narrow streak of water. I remember the tension of my brain, and almost see the strained attitudes of the men about the guns. Yet, when the loading of the guns had been done, there was not a sound; every man seemed simply waiting. The temptation to fire was tremendous; yet not a shot was fired. We saw that boat steer directly at the flagship, and then, to our amazement, go peacefully alongside! Some man went up the ladder to the deck. We heard afterward (but of course the story is not true) that when this man reached the deck, he was met by Commodore Dewey, who greeted him with the information that he was a d—— fool.

I do not now remember who the man was, or why he started at night in war to go on board a fighting ship, but I remember that his business was not important. And he may be thankful that the coolness of the men behind the guns saved him from gurgling and bleeding out his life that night under the waters of Manila Bay.

Next morning most of us went on deck early to look at our surroundings. The sun was already intensely hot, and shining through clear air out of a bright sky; there was no breeze, and no ripple. The ships of our fleet were lying near together off the city of Manila, perhaps two miles away, and the ships of the Spanish fleet were about seven miles to the southward, near Cavite. Three of them were sunk, and beyond them were the seven that had been set on fire. These were still burning, while a long red steamer was aground, and also burning, between the American fleet and the Spanish fleet, close to the shore, and about six miles south of Manila. This

steamer had been set on fire by the *Concord*, and we afterward found that she was the transport *Isla de Mindanao*.

The city of Manila looked distinctly Spanish. Of course the most prominent object was the cathedral, whose dome rose beautiful and high. In masses, grouped about it, were many fine buildings that we could not see very plainly. This part of Manila we afterward found was the old and walled city, the city of Manila proper. To the southward and the northward the fine buildings gradually shaded away into smaller ones, toward small huts that were evidently in the suburbs. In the foreground, between us and the cathedral, was a lighthouse, on the end of a river that came through the city to the bay. Along the extreme background ran mountains that were high and far away.

Captain Lamberton, chief of staff, came on board early, and with him, I think, was Mr. Joseph Stickney, war correspondent. Then the *Petrel* picked up her anchor and steamed rapidly southward towards the arsenal at Cavite. Later the entire squadron followed her. The *Petrel* passed the sunken ships *Reina Christina*, *Castilla*, and *Don Juan d' Ulloa*, which had sunk somewhat to the northward of the bastion of the arsenal, passed the bastion, and went to her anchorage of the day before in Bacoar Bay, directly in front of the landing-place of the arsenal. Captain Lamberton and Mr. Stickney went ashore to the arsenal, and shortly afterward returned. If I remember aright, we heard, when they returned, that the Spanish army officers told Captain Lamberton that the surrender of the day before had been the surrender of the navy only, and that neither the arsenal nor the army had surrendered. To this Captain Lamberton replied that he would give them until eleven o'clock for all to surrender; and that if the white flag was not hoisted on the arsenal by that time, the whole fleet would open fire on it.

Soon a white steam launch was seen coming from the

arsenal. It came alongside the *Petrel*, and three Spanish officers came on board. They were received with the honors due their rank, which they acknowledged with dignity. Evidently they were under a heartbreaking strain, and surely it would be a cold heart that would not pity them. These were officers who had been terribly beaten in battle; their entire naval force had been wiped out, and their military force had nothing to hope for. These were officers of a country whose battle they had lost, whose power they had failed to uphold, and whose glory had perished in their keeping. These were officers of a country that was not magnanimous, and might repay their brave, but futile, efforts with indignity. Most of them had their wives and families in Manila. Manila had close in front of it a powerful, victorious fleet; and behind it and in it, and all around it tens of thousands of bitterly hostile Filipinos, partly organized and armed, waiting for revenge.

The Spanish officers went into the cabin, and shortly after came out and got into their boat, and went ashore. Soon after, a white flag was run up at the arsenal. We understood that the Spanish naval and military people were allowed to leave the arsenal and go where they wished. It was impossible for Commodore Dewey to accept them as prisoners of war, because, if he did, he would become responsible for them; and what could he do with them?

That afternoon there were signs of great activity in the arsenal while the Spanish were leaving. The next day they had all gone, and a force of American marines was put in charge.

The arsenal is built on the end of a long neck of land, which is quite narrow, and protrudes from the main body of the island; and the principal gate of the arsenal is placed near where the narrow neck of land meets the larger piece of ground on which the arsenal stands. The headquarters of the marines was near this gate, and guards were stationed at the important points of the

arsenal, the most important point being, of course, the main gate itself. The *Petrel* was anchored at her station near the dock, and the larger vessels of the fleet lay not far to the northward, in deeper water.

The next afternoon a party went ashore at the arsenal from some of the ships, on what mission we of the *Petrel* did not know. We saw them ashore behind some trees, and after a while they seemed to be digging. Then they went away. Soon some of them reappeared, and we could see that they were carrying some things which they seemed to throw into a hole; we could also see that they had their black neckerchiefs over their mouths and noses, and that they held their heads away from the things they were carrying. This was kept up for perhaps half an hour. Then the party reappeared together and seemed to dig again. Then they disappeared again, and soon came down to the landing, and got into their boats, and went past the *Petrel*, back to their ships. We could see that they looked very much depressed. We learned afterward that they were a burial-party. A number of wounded Spaniards had been taken to the hospital in the arsenal and had died there; and when the men from our fleet buried them, they had to protect their own mouths and noses with their black neckerchiefs.

Later that day the captain sent for me and said that he wished me to go on board the *Manila* that evening, stay on board all night, and try to get her off next morning. The *Manila* was a Spanish transport nearly twice as large as the *Petrel*, and had been run aground in soft mud in Bacoar Bay, a considerable distance ahead of where the *Petrel* lay. The captain told me to pick as many men as I needed for the deck force, and told Hall to pick the engineer's force. I do not remember how many men Hall and I took; but I know our idea was rather to get trustworthy men than to get many, for we might be attacked. So about seven o'clock that evening, after dinner, we went alongside the *Manila*, and I walked up the long ladder that hung down to the water to take my first

command, followed by Hall and perhaps forty men, all well armed.

I found the *Manila* was just beyond the outer wall of the arsenal, close to the shore, right opposite the neck of land that connected the arsenal with the mainland of the island, and near a large village; but the burned ships were near, and when a whiff of air came from their direction, I could smell burned wood. We searched the ship thoroughly to see if there were any men concealed on board, or if there were any slow matches laid to blow up the magazines.

Hall sent some of his party below to start fires under the boilers, and then we searched for ammunition for the various guns about the deck, which were mostly Nordenfeldts of different kinds. We found a good deal of ammunition scattered about near one of the magazines, and we put plenty of it behind the guns. The guns were in good condition and easily got ready.

On going to the state-rooms, of which there were a number, we found basins of blood and water, with sponges in them, pieces of lint stained with pus and blood, and rumpled beds, with bloody mattresses, which showed that wounded men had been cared for in them. On the main-deck were about thirty cows. These cows did not have the peaceful air that most cows have, but were very much excited, and kept running about, so that we had to pen them in the forward part of the deck.

By the time we had got the ammunition up and the guns ready it was nearly dark; so Hall and I had our mattresses spread out in the chart-room, which was on the upper deck, under the bridge, because we would get the most air there. I had my mattress put on the table, and Hall had his put on the deck.

Before turning in, I went on the bridge and took a look around. It was dark now and absolutely quiet, except for the continuous barking of dogs on shore and the frequent reports of muskets. I have never known why there was so much firing that night. From the

bridge I tried to see where the firing came from, but I could only make out that some came from the arsenal, but that most of it seemed to come from the village. I could occasionally see the flashes, and sometimes I heard the whistle of a bullet.

The village was on our starboard side, and the smoldering flames of the Spanish ships were on our port side. Directly ahead there was nothing but darkness. The search-lights of our ship did not light up the water ahead of us, but I could discern a number of boats moving about there, and I wondered if some Spaniards were in them, getting ready to board us and have revenge. To the northward—that is, astern—I thought I could see the form of the *Petrel*. Beyond her were our other ships, but I could not see them. The main thing that attracted my attention and held it was the mosquitos. They were not only numerous, but aggressive; and I saw one sentry whom I had put on the bridge striking at them with his musket.

After making a tour of the dark and silent ship and cautioning the sentries, I went to the chart-room and turned in on the table. The mosquitos bothered me a great deal, and so did the occasional reports of muskets and the memory of the boats; but I was tired and soon fell into a sleep.

How long I slept I do not know, but I was awakened by an intermittent, jerky sound, which was low in tone, but very loud. I got up and went out on the deck, and saw the quartermaster and corporal of the guard there, and asked them what was the matter. One of them said:

“It’s the steam whistle, sir.”

I said:

“Why don’t you stop it?” and he replied that they did not know what was the matter with it.

Just then Hall cried out:

“Here it is; some one has made fast an awning-stop to the steam whistle.”

We found this was the case. In securing the awning

that evening, somebody had tied an awning-stop to the line that pulled the whistle. It made no trouble then; but afterward steam formed, and rose in the steam pipe to the valve that was controlled by the line to which the awning-stop was made fast. Later a little breeze sprang up and flapped the awning, so that the awning-stop pulled at the whistle-line irregularly. The result was a most extraordinary gasping and coughing by the steam whistle. We heard afterward that this alarmed the *Petrel*, and that she was about to send a relief party to our rescue when the noise ceased.

I turned in again, but scarcely had I got asleep when I was roused by what sounded like a charge of cavalry. On investigation I found the cows had broken loose, and it took all hands to get them back where they belonged. Again I turned in and went to sleep, but only to be awakened by a voice calling me softly. I did not pay much attention at first; but the call was repeated, until I finally roused myself and looked up, and saw the corporal of the guard, holding a dim lantern in his hand.

"Sir, the men have broken into the wine-locker," he whispered.

Now, this was important, so I got up and put on my shoes and went down the ladder to the main-deck, and then groped down a long, wide, old wooden ladder that went into the hold.

"Right ahead of you, sir," said the corporal; so I went ahead, and finally found a door which I could see by the light of the corporal's lantern behind. Going through this door, I found myself in a large compartment in which there were a great many barrels, and I could see a man, with his back to me, stooping over. He heard me coming, and, speaking over his shoulder, said:

"Ah, birdie, you on to the game?"

I answered that I was not, and asked him what the game was. He recognized my voice and said:

"Oh, excuse me, Mr. Fiske, for speaking to you in that way, sir. I did n't know it was you, sir; but us men in

the engineer department got thirsty, and we heard there was some good water here in casks, sir, and so I came here to get some. But it looks to me as if was n't water, sir, but wine."

The man's presence of mind filled me with admiration, and so I told him merely to pour out his wine on the deck and go back to his work. I then had the corporal get an ax and break in the head of the barrel. And I saw thirty-three gallons of the delicious wine of Spain flow all over the dirty deck and trickle down into the bilge, and smelt its delightful fragrance.

I ascended to the bridge and watched the boats moving about in the dim light, and then went back to bed again; but had not slept very long when daylight came. By this time the men were about the deck drinking their coffee and making their slender breakfast. Hall reported that he had steam on the engine and would like to turn the engine over. We went on the fore-castle then to see how the anchor gear looked. We found it in good condition, and got the anchor up without difficulty. Why the Spaniards had taken the trouble to anchor the ship I do not know; for she was hard and fast aground.

When looking about the deck we had seen a long trough under a tank on the starboard side, and a pipe above the tank, and while we were looking at the trough, we had noticed that the cows were even more restless than usual, and tried to get to the trough. After getting the anchor, it suddenly occurred to us that perhaps the cows were thirsty, and that it was this trough from which they used to drink. So we investigated, and found that the pipe led to the tank from a pump; and then I sent a couple of men to pump water. At the sight of the water the cows got completely beyond our control and rushed to the water, the strong ones shoving the weaker aside. I never before got such a clear idea of what a torture thirst must be. The cows that saw the water, and could not reach it, seemed to be in agony; those that drank

seemed to feel that bliss which only those who have been suddenly freed from awful pain can understand.

Hall said that the ship was so deep in the mud that the injection-valve, where the water came in for the condenser, was covered with mud, and that the circulating-pump was not independent, but connected to the main engine; so that he could not pump water through the condenser except by turning the main engine. He then suggested that by backing and going ahead alternately he could pump in mud and water through the injection-valve, and thus make a kind of trough immediately outside the injection-valve, so that afterward clear water could come in, which the circulating-pump would force through the condenser. This would clean out the mud, and the condenser would then be ready for work. This was done for a while, until Hall finally reported that clean water was coming out the outboard delivery-valve, showing that the condenser had been washed out.

It must have been about seven o'clock when Hall reported that everything was ready with the engines. I shoved the engine telegraph to full speed astern, and, to my delight, the ship began to move, slowly at first, then faster and faster. The *Petrel's* chief quartermaster, Ecklund, was at the wheel; and as soon as the ship got out of the mud, I found she steered beautifully going astern. We gathered headway rapidly, and by the time that we had passed the quarter of a mile which separated us from the *Petrel*, we were going through the water at a fine rate. Thinking what a pretty sight this prize would make as seen from the *Petrel*, I steered as close to her as I could until I got just abreast of her stern, and then starboarded the helm, rounded to astern of her, and then went ahead with port helm, headed for the *Boston*, about half a mile away. Five minutes later we anchored close to the *Boston*; Captain Wildes took the *Manila* under his charge, and we all went back to the *Petrel*.

About the middle of July it seemed to some of us that

matters were becoming critical and that Admiral Dewey was getting into a difficult position, and I heard several prophecies that he would lose his reputation where he made it—in Manila Bay.

In addition to our troubles with the Spaniards, we had also our troubles with the Filipinos. We knew that the powers of Europe were not at all sure yet as to whether or not they would intervene to prevent the United States from taking the Philippines. We knew that they would be very much more likely to intervene if we made any mistakes, or got into any trouble with the Filipinos or with any other nation, than if we were successful in everything; consequently it was very desirable to us that everything should run smoothly. We knew that some of the foreign powers were watching us very closely, and we heard that Prince Henry had said to Consul Goodnow in Shanghai, "The powers will not permit you to keep the Philippines."

We also knew that Prince Henry was brother to the kaiser, and inferred that as he was on duty in Asia in command of a squadron, his utterances were probably official.

It was clear to us, therefore, that Admiral Dewey had his hands full, and it is not surprising that we viewed with much anxiety the strange actions of a German squadron in the bay. We were holding an effective blockade of Manila Bay and were a recognized belligerent. Therefore, by all the rules of war and military courtesy Manila Bay was ours, and Admiral Dewey had the war right and duty to do everything in the bay that he thought necessary to the successful prosecution of the war. One thing was the boarding of every vessel, war vessel or merchant vessel, that came into the harbor. What was our astonishment on hearing that the admiral of the German fleet objected to his ships being boarded, and that he had a council of war on board his flag-ship at which the captains of the war-ships of the various neutral nations were present, and at which he proposed the

question to each one, "Would you permit your vessel to be searched by a foreign man-of-war?" A lieutenant of the British ship *Immortalité* told me that Captain Sir Edward Chichester, the captain of the *Immortalité*, was the first one to whom this question was addressed, and he answered that he was not the junior at the table, and therefore would not answer first. The officers answered afterward in the inverse order of their rank, each one, including Chichester, saying, "No." Then Chichester said:

"It is not a question of being searched; it is simply a question of being boarded on coming into a blockaded harbor in time of war by the admiral of the blockading fleet. The admiral has a perfect right to board all neutral men-of-war." And he opened an official book, which he had brought with him from his ship, from which he read his authority for this statement.

Then it was very confusing, when we were using our search-lights at night, to have the German fleet use their search-lights at the same time. That they knew that their relations with the Americans were strained is shown by the fact, told us later by one of their officers, that on one occasion one of their ships, which had been outside for a short time, came into the bay cleared for action. But perhaps the thing that caused us the most surprise was one of their ships preventing Aguinaldo from taking Isla Grande in Subig Bay. Admiral Dewey then sent the *Raleigh* and *Concord* to take it. It was reported in the bay that the German admiral endeavored to get Admiral Dewey to commit himself in regard to the Filipinos then by asking him, with relation to this incident, whether or not he recognized the Filipino flag.

The reason for the actions of the German fleet was a point much debated by us in the *Petrel*. One side held that they were not really trying to make things difficult for the Americans, but that from long habit they had come to regard Americans as of small account, and were simply acting thoughtlessly.

This side had a very strong case, for Europeans did not then have much respect for Americans as a naval people or as a nation. This may seem a strong statement, but for years American officers in all parts of the world had been smarting under the light way in which they and the United States were regarded by Europeans. It was not that we were treated with positive discourtesy by European officers and European people, but that we were patronized. Most Europeans had no adequate idea of the immensity of the United States, and even those who did regarded the United States as a collection of separate States, held together very loosely in a sort of confederation, without any real national organization, and therefore without any national strength. They had been accustomed to see our miserable ships in different parts of the world; and being used from childhood to the idea that a war-ship represents her country, and that one can tell from a war-ship what kind of country she belongs to, they had come to the conclusion that the United States and her people, while industrious, moral, and rich in a material sense, were not people who belonged in the polite society of nations. And we knew that for years in European courts American ministers were not expected to act like the ministers and ambassadors of European countries, and that some European courts had instructed their ministers and ambassadors to tolerate certain rudenesses in American ministers that they would not tolerate in other ministers.

The other side in this argument insisted that the German fleet was carefully trying to exasperate Admiral Dewey into committing some indignant act that would put him in the wrong, and stir up a hostile feeling against him among the other men-of-war in the harbor; that, as one of them expressed it, "they were putting stumbling-blocks for him to trip over." They quoted the rude remark of Prince Henry to Consul Goodnow in Shanghai, that the powers would not permit the United States to keep the Philippines, and pointed out that it was known

that his country wanted larger trade in Asia and better means of influence. They asserted that she was entering into competition in trade in Asia, but was handicapped by having little land there, and that it would be very unfortunate for her trade if the United States should get the Philippines, because the United States would then have a base that would help immensely American trade and influence. They asserted his country was known to be very ambitious; that she had stood before the world for many years as the nation that had made greater advances in music, mathematics, physical science, and military science than any other nation; that she combined more than any other nation the qualities of profound thought, inventiveness, thoroughness, courage, and physical health, and that within the last few years she had turned herself toward naval matters and had there shown the same superlative ability that she had shown in all other things that she had tried, but that her territory was too small to support her people, that it was desirable for her that her trade should grow; and that she did not want any more competition in Asian trade than she already had.

This side also held that, whatever might have been the feelings of the other officers, the steps taken by the German admiral were taken in obedience to orders from his Government; and, in fact, that no one having knowledge of the admirably exact methods of their discipline could believe that steps involving such grave international issues could possibly have been taken otherwise; and that, since these steps were very embarrassing to the American fleet when it was engaged in war, and were taken by a fleet that professed to be a friendly neutral, and was enjoying the privileges of a friendly neutral in a blockaded port, they bore some slight resemblance to the act of a man who, being privileged to be present at a duel as a friend of both contestants, should jar the elbow of one contestant at the instant he fired his pistol.

I remember that Admiral Dewey came alongside of the

Petrel one forenoon, and seeing Commander Wood standing on the poop, said with that manner which suggests a gentleman asking a lady for a dance: "Good morning, Wood. I should be very glad if you would come ashore to the arsenal with me and take a walk." The captain got into the admiral's barge, and they went together to the arsenal. Not very long afterward they came back, and the admiral came on board with the captain and took lunch in the cabin. Later he sat on the poop, and some of us talked at intervals with him. Of course we observed him somewhat anxiously, but he seemed to have nothing whatever on his mind, and talked with us about anything. Captain Wood, however, seemed to have something on his mind.

CHAPTER XVIII

THE CAPTURE OF MANILA CITY

ON the morning of August 13, after the decks were cleaned and the bright work polished, the men went to breakfast at half past seven. The ship was already cleared for action. Ammunition was on deck, and everything was ready. By half past eight everybody had had his breakfast and was standing by. We knew by this time that we were to get under way at nine o'clock and steam south directly in front of the guns of the city until we should get opposite Fort San Antonio, the extreme southern end of the defenses of Manila, about two miles distant from our anchorage. The German and French men-of-war were lying to the northwest, out of range of the guns of Manila. The *Concord* was about two miles north of the *Petrel*, opposite the village of Tondo, where the entrenchments of the Spanish came down to the bay, and while not exactly out of range of the Manila guns, was rather over on one side. The American fleet and the American transports could be seen about seven miles to the south, off Cavite, and near them were the English and Japanese men-of-war. There was a great deal of smoke coming from the American ships off Cavite, and we knew that, even if the Spaniards in Manila had not received notice that the American fleet was about to attack them, this unusual amount of smoke would tell them so.

I went up on the bridge about half past eight. Looking through a spy-glass, I could see plainly the whole front of the batteries of Manila. Directly to the east of us, near the Pasig River, which came down through Manila to the bay, was one of the large 9.2-inch guns.

Extending to our right—that is, toward the south—was the long wall of Manila proper, running perhaps half a mile. In openings cut in this wall I could see very many small cannon. Near the water was a long line of some kind of fortification. I could see two very large guns pointing over this fortification, besides some smaller guns. Still farther to the right, perhaps half a mile south of the end of the wall of the city, at the end of the Luneta, was another very large gun. I could see signs of a great deal of stirring about. Of course I could not see behind the walls of the city of Manila proper, but I could get a good view of the ground in the neighborhood of various guns, and about these guns I could discern groups of soldiers. It was plain that the people in Manila knew what was about to happen and that the soldiers had taken their stations.

Commander Wood soon came on the bridge, and we discussed the situation. I have never known how much he knew about what was to be done, but I do not think that he knew much more about it than I did. He was perfectly self-possessed and calm, and I said to him:

“I hope they will let the *Petrel* get down to her position off Fort San Antonio before the rest of the fleet begins to close in.”

“Yes, I hope so, too,” he answered.

I handed him the telescope, and pointed out where he could see the groups of soldiers gathered about the guns. He examined them carefully, and handed the glass back to me, but said nothing. I said to him:

“I bet one of the officers last night a dollar that we would not be hit to-day even with a brick, and I expect to win the bet.”

He said he thought I would win the bet, and added that the Spaniards, if they chose, could sink us right where we were in five minutes, and that not a soul on board would last five minutes longer; but that he felt sure himself that, if the Spaniards had wanted to do that, they would have done it before now. I said I

agreed with him entirely, but I think both of us awaited the coming minutes with a good deal of anxiety.

Soon after, a signal flew out from the flag-ship, "Prepare to get under way."

I must admit that I felt a cold feeling inside when I saw that this signal was made to the whole fleet and not to us alone, but I said to myself that perhaps the signal would be modified and that we should be given a chance to get down to our station before the other ships moved. If this was done, I thought that we should probably not be shot at; but I thought that if we started to pass in front of all those guns, just when the rest of the fleet started toward them from Cavite, our going would look like part of a hostile demonstration, and we should be treated accordingly.

Our anchor was already up, and soon the signal to get under way was hauled down. The captain moved the engine telegraph to full speed ahead. Somebody said:

"Bradley, you are going to lose your bet."

"No, I think not," I said, but in my heart I thought I should.

The *Petrel* began to forge ahead slowly. The captain, Hughes, and I were on the bridge, and the men were at their battle-stations behind their guns. The guns were loaded, and the gun captains were standing behind them, looking over the gun-sights toward the guns of Manila. Through the glass I could see a round hole in one of the big guns, showing that the gun was pointed directly at us; and as we moved along, I could see that the hole remained just as round as at first, showing that the Spaniards were keeping the gun continually pointed at us. We seemed to go extremely slow past all those guns, big and little, especially at first; but in about five minutes we said to ourselves that if the Spaniards were going to shoot at us, they would have done it already and, after that, we seemed to go faster.

The weather had been miserable all the morning. It

now began to rain slowly, so that things on shore and on the water looked less clear; but we could see our fleet gradually approaching the point toward which we were heading—a point near Fort San Antonio, and we recognized the fact that events were coming to a crisis.

I have heard it stated since that Captain Sir Edward Chichester now moved the *Immortalité* between the American and the German fleets, and that historians have accepted it as a fact. I did not notice it at the time. I have never heard of any one else who noticed it, and I am sure it never happened.

The *Petrel* took up a position southwest of Fort San Antonio, perhaps twenty-five hundred yards away; I do not remember exactly. The *Olympia* and *Raleigh* were northwest of us in deeper water, while the *Boston*, *Charleston*, and *Baltimore* were farther out in the bay. The *Concord* remained at her position off the northern end of the defenses of Manila. The *Callao*, which was now a United States gunboat, commanded by Lieutenant Tappan, and the tug *Barcelo*, were inshore of the *Petrel*, standing by to support the left flank of our troops, when they would advance toward the north, to take Fort San Antonio. The monitor *Monterey*, with her twelve-inch and ten-inch guns and her heavy armor, took up her position directly in front of the walled city, and we looked forward with interest to seeing what would happen when her eight-hundred-and-fifty-pound shell would begin to strike the fortifications.

Imagine our disgust afterward when we found that the officers of the *Monterey* had known for three days that there would be no fight, and that Admiral Dewey had told Captain Leutze that the governor-general had tried to get him to allow the Spaniards to fire a few shots at the American fleet "to save their honor," but that he (Dewey) had refused to be a party to any such proceedings as far as his fleet was concerned, though he had not thought it his business to object to the Spaniards' firing

as much at the American soldiers as they wished. So the *Monterey* was cleared for action, with orders to shell the 9.2-inch Spanish guns and the city behind them if any shot was fired at one of Dewey's ships. No such shot was fired, of course, and the *Monterey* remained a passive spectator of the curious scene.

We could not see any sign of the American soldiers on shore, but we had heard that General Greene had advanced his whole force to the entrenchments just north of the convent, and that General MacArthur had taken possession of the Filipino entrenchments in front of Blockhouse No. 14; so that the American forces faced all that part of the Spanish forces that extended from Fort San Antonio eastward to Blockhouse No. 14. About two hundred yards south of the fort a small river ran between the Spanish and the American lines. It had been supposed to be unfordable; but Major Franklin Bell had ascertained that it was fordable by the simple process of fording it himself. This was a very brave thing to do, and a very sensible one; and I think it was the first of a remarkable series of brave and sensible things which he did in the Philippines, and which made him a brigadier.

At half past nine the *Olympia* opened fire on Fort San Antonio. The *Raleigh*, *Baltimore*, and *Petrel* followed instantly. The critical moment had come, or, rather, we thought it had, and we of the *Petrel* braced ourselves to get our dose.

The little ship went ahead with a vim, and shook all over with the violence of her exertions. But I could not locate her very satisfactorily on the chart, because there was no landmark near except the fort, from which I could not take a good angle. So I had to do a good deal of guessing about her position, and therefore a good deal of guessing about the range, and I wished with all my heart that the *Petrel* had my range-finder. Still, we banged away, and fired a great many projectiles. We could not tell where they went except when we saw some

drop into the water, but we did the best we could, and perhaps some of them hit the fort. After this had gone on about ten minutes, I said to the captain:

"Captain, I should n't be surprised if this whole performance was a sham. Don't you notice how slowly the *Olympia* is firing? And I don't think she is firing her eight-inch at all. Besides, I just saw a signal from Manila, and I have not seen the *Monterey* fire at all, and no one has fired at us."

"Yes, I should n't be surprised if it were all a sham," said the captain, with a smile.

During the battle of May 1 the gun-fire of the *Petrel* had gone like clockwork, but this day the performance was very unsatisfactory. We found a great deal of trouble in keeping our position and in getting our guns to bear well. The difference between the two occasions was that on the first of May the ships had been kept going through the water all the time at enough speed to give the captains good control of them, but on August 13 they hardly had steerageway. This did not make quite so much difference to the ships that had twin screws; but to the *Petrel*, which had only a single screw, it was very exasperating.

The ships had banged away for about an hour without getting any reply at all, when suddenly we saw almost abreast of us a line of soldiers jumping apparently out of the ground. These soldiers deployed down to the beach, and then began to advance in line toward the north; that is, toward Fort San Antonio. Immediately the flag-ship signaled to the fleet, "Cease firing."

The line of soldiers advanced rapidly, and we could hear the American field-artillery somewhere farther inshore. Then the Spaniards began to reply from some place in front of them. We could not see any signs of the Spaniards or even of their smoke, because they used smokeless powder. The only thing we could see was the long line of our soldiers advancing toward the river—brown hats, blue bodies, and brown legs. They marched

directly into the river without hesitation, their supports coming up behind, and quickly gained the opposite shore.

All this time there was a lot of firing from the Spaniards, but most of it seemed to be farther inshore than the fort; and we said to ourselves that we probably had driven the Spaniards out of the fort. Now we saw a small detachment of American troops dash forward, close to the beach, after they had forded the river. Then they ran along that side of Fort San Antonio which faced the beach, turned to their right, and disappeared. In a minute we saw the Spanish flag come down and the American flag go up.

We could not see much of what happened after this, but we could tell from the sound of the musketry and artillery that the Spaniards were retreating toward the north—that is, toward the walled city—with great rapidity.

The little *Callao* and the little *Barcelo* accompanied the left flank of our soldiers as they advanced toward the north, and kept the Spaniards back from the water-front.

It was not long after this that we saw a large white flag on one of the southern bastions of the walled city. The admiral then hoisted the signal to Manila, “Do you surrender?”

We could not read the reply made from the city, but we afterward learned that the governor-general asked for a conference, and that Lieutenant-Colonel Whittaker and Lieutenant Brumby, who was Admiral Dewey’s aid, went ashore to see what he wanted, Brumby carrying a very large American flag.

Our fleet now formed in front of the city. Some time later the flag-ship threw out a signal that most of us had never seen before, and that probably most of us will never see again, “The enemy has surrendered.”

The Spanish flag was still flying over the city, and it was not hauled down and replaced by the American flag until five o’clock that afternoon. We found out after-

ward that the Spanish authorities agreed to surrender when Whittaker and Brumby met them, but that they asked that some United States troops be sent up the Pasig River and landed in the walled city before the Spanish flag was hauled down, in order to preserve order. An Oregon regiment was sent ashore about four o'clock and stationed about the city.

At five o'clock Lieutenant Brumby hoisted the American flag over Manila, the capital of the Philippine Islands.

CHAPTER XIX

HONG-KONG, TAKU, SHANGHAI, AND A GALE OF WIND

WE received orders to go to Hong-Kong for docking on September 10; but our orders were delayed by signal on September 9, and we heard that the cause was a sudden trouble with Aguinaldo. The trouble must have been smoothed over soon, however, for we started on September 15, feeling like school-boys off for a vacation. We had been in Manila Bay for nearly five months without any fun of any kind, and now we saw before us a few days of civilization and its pleasures.

The trip was delightful, and when about two o'clock in the morning of the nineteenth I was called to go on the bridge, I saw ahead the revolving-light of Waglan Island, which stands outside Hong-Kong. The night was clear, and there was good daylight by half past five. We steamed forward among many islets, and soon passed between the high and rocky boundaries of the entrance to Hong-Kong.

At half past six we dropped our anchor, and we looked about with delight on the round bay full of Chinese junks and sampans, each with its family on board, and the large ocean steamships. We looked over to Hong-Kong, and saw the familiar rectangular buildings, rising higher and higher above the water, and the terraces with their tennis-courts, and the railroad up the steep mountain-side.

At eight o'clock we sat down to breakfast in the ward-room, and each man found in front of his plate the morning newspaper, and each man picked up his newspaper and leaned back luxuriously in his chair and read it, and felt that he was in the world again and one of the people that lived in the world, and not an outsider.

The admiral had told the captain to hurry back as soon as possible; so we had only four days in which to enjoy Hong-Kong, with our dinner at the club, which seemed so elegant, and our walks and our jinrickishas. One evening I dined with Mr. and Mrs. Bottenheim at the Cragieburn, on Victoria Peak. After dinner we strolled about on the splendidly made English walks, cut in the solid rock and they pointed out the beautiful stone summer residences and the winding roads among the trees and the gentle curves of the hills, looking white and soft in the moonlight, and the thousand lights in the city and the bay beneath us, and the lighthouses far at sea, and the blue water stretching out to the horizon.

At the end of four days the *Petrel* was steaming out again between the magnificent headlands, under the great cannon and over the submarine mines that guard the entrance to Hong-Kong.

We expected to take up our old station at Cavite when we got back to Manila Bay, and we looked forward dully to hot months of swinging idly around our anchor, doing nothing at all. We did do this for a week, but one afternoon Lieutenant Brumby came on board, went into the cabin, and stayed there about five minutes, and a few minutes later the captain came out and said to me, who was acting executive officer:

"Get the ship ready to go to Taku to-morrow."

I touched my cap and said, "Aye, aye, sir." Then I walked over to the port side of the quarter-deck, and one of the fellows said to me:

"What's that, go to Taku to-morrow?"

"Yes, I think that's what he said," I replied. If the captain had suddenly announced that we were to go to San Francisco to-morrow it would not have created much more astonishment. Taku is the port of Tientsin, in the extreme northern part of China, not far from Peking, and the change from Manila to Taku would be tremendous in every way. We knew that there must be some sudden trouble with the Chinese, for we had heard from time to

time that the "Boxers" were becoming very active. So we said to ourselves that we were through with Manila and hot weather for a while, and were in for a winter at Tientsin. We knew that many war-vessels of different nations had often wintered at Tientsin, lying there as supports to their legations in Peking.

On the evening of October 4, just at sunset, we steamed out, passing Corregidor Island, and looked back at the noble outline of Manila Bay, which had been our home during many months of vivid life. The weather was very warm and very beautiful, and that night and the next day we steamed quietly along and enjoyed the real luxury that ocean traveling sometimes is.

But the *Petrel* was in the place where typhoons are the most frightful, and it was the month when they are the most frequent; so we watched the weather keenly.

October 5 was very fine, and so was the early morning of the sixth; and we said to ourselves that "*Petrel* luck" was keeping up, and that if the weather would only keep good until we reached the China coast, we could get protection after that. But later in the morning of the sixth the wind began to freshen, and it freshened rapidly; so rapidly indeed that in an hour and a half we were in a howling gale.

We watched the weather signs carefully, and soon determined that this was not a typhoon, but the opening of the northeast monsoon. This relieved our minds a good deal; but still we knew we were to have a very disagreeable time, because in the Formosa Channel, where we were, the northeast monsoon raises a tremendous sea.

By nightfall the little *Petrel* seemed to be struggling for her life, pitching and squirming in a frightful sea, while waves broke over her and ran along her decks, and the rain came down in sheets, and the wind made a great noise as it struck the masts and rigging.

Before I turned in I made up my mind to go up on the bridge and see how Ensign Fermier, the officer of the deck, was getting on. So I put on my oilskins and rub-

ber boots, and staggered up to the bridge, guiding myself in the darkness by the life-lines. I found Fermier holding on hard to the stanchions, his feet wide apart, peering ahead, where nothing but the white of breaking waves could be seen.

The waves were coming down on the *Petrel* from the direction of her starboard bow. As her bow settled down into the water, and I watched the first oncoming wave, I noticed, as I looked up, that the wave was higher than our heads, and I said to myself that our time had come at last, that the *Petrel* could not possibly rise to such a wave as that, that it would fall down on the ship, and that would be the last of the *Petrel* and of us. But Fermier had become used to watching the high waves; for he steadied himself with one arm around a stanchion and the other arm around my neck, and put his mouth close to my ear, so I could hear him, and sang:

“Bother me eyes, the ship ’s a-sinking;
Bother me eyes, we ’ll all be drowned;
Bother me eyes, we ’ll go to the bottom;
And bother me eyes, we ’ll never be found.”

It was not very pleasant on the bridge, so I thought I would go down and see if it was pleasant in the wardroom. I held on tight to the man-ropes going down the ladder, and looking back over my shoulder, I saw Fermier’s shoulders and head outlined against a white wave, and I felt sure that he would be washed off the bridge. But the *Petrel* rose to that wave, as she had risen to others, and so I staggered down into the wardroom. There were four officers there, and they did not seem to be enjoying themselves very much. The chairs and table were lashed to the deck, and the officers were sitting on the chairs, holding on as hard as they could to the table. Their conversation was something like this: One man would say, “Wonder how long this thing ’s going to keep up”; another would say, “A man ’s a fool to go to sea”; another would say, “Don’t think we ’ll get much sleep to-night.”

Just then there would be an awful thump somewhere, and we would hear water rushing along the deck. The ship would tremble, and we would all keep quiet. Then somebody would say, "That was a good one," another would say, "Must have taken a lot of water on board that time," and so on.

We gradually dispersed, each one staggering along toward his room, bumping against the bulkheads. The doctor and I were the last to leave. I was sitting on a chair that faced to starboard, and when the ship would roll to port, I would go over almost on my back, with my feet in the air; and when it rolled to starboard, I would lean forward till I was nearly doubled up and grip the arms of the chair. Finally, I got up and went to my room as steadily as I could. As I entered my doorway, the ship gave a violent lurch, and I ran at my bunk with outstretched arms, but caught myself without injury. Undressing required considerable skill, but I finally succeeded in accomplishing it, and then I turned in, and put out the electric light. While the light was turned on I had felt quite at home; I was in a room, and I saw in front of me a desk, a mirror, and the pictures of my wife and daughter; but when the light was out, and I lay down on my bunk with my back against one side of the bunk and my knees against the other side, and heard the waves strike every few seconds against my air-port and then go away and come back again, and I thought to myself that those waves were only a foot away from my head, I felt that I was a tiny atom, out on the ocean, and almost in the ocean, in a howling gale of wind; and I was very miserable indeed.

We banged about in our bunks that night and got snatches of slumber once in a while. All the next day the little *Petrel* tossed and squirmed and rolled. Standing on deck and looking out over the large area of water and seeing the size of the waves, the *Petrel* seemed literally to be tossed by them. She seemed very tiny and to be struggling against unfair odds; and sometimes when

a tremendous wave would lift her, she seemed almost to jump out of the water, like a flying-fish.

A few days after, we rounded the promontory of Shantung, the northeast corner of China, and headed to the west, along the Gulf of Pechili. The tides in this remarkable sheet of water are absolutely impossible to predict, and I am told that even the pilots of the place make frequent mistakes about them. So the following evening about nine o'clock I was not astonished when we suddenly made out the lightship anchored off Taku, three hours before we expected to make it out. The night was not very clear, and the lightship was not very far away; so before we quite realized that our trip was drawing to a close down went the anchor, and the engine ceased to throb.

The *Boston* had left Manila three hours before we had, to go to Taku, and we expected to find her at anchor; but we could not see anything except a few lights too close inshore to be hers and the twin lights of the lightship. We afterward found that the *Boston* had had a hard time in the monsoon, and had gone into Amoy.

After plotting the ship's position on the chart, I went down into the wardroom. There were a number of officers sitting there, and Hughes turned to me, with a blissful smile on his face, and said: "Bradley, isn't this delightful?" There we were, out of sight of land, with no town nearer than twenty-five miles and that town not a very attractive one; there was no chance of seeing any newspapers or going to the theater or seeing anybody that we did not live with all the time or of doing any other of the thousand and one things that people like to do. But the whirling of the propeller and the thumping of the engine and the vibration and rolling of the ship had stopped, and the strain of the trip was over. So when Hughes said, "Isn't this delightful," we leaned back in our chairs in the wardroom, where it was so quiet, and agreed that it was delightful.

That night when I turned into my bunk I reminded

myself that I did not have to fear any attack of torpedo-boats or anything else, and that I was not in danger of being called because the search-lights did not work well, and that I should not have to get up at daylight next morning to pilot the ship all day in dangerous waters. So I stretched out tranquilly and slept.

The next day, while I was standing on deck, I was knocked down by a spar that fell on my head. I bled a great deal, but was not seriously hurt. I remember my principal concern was lest I should faint, and that I insisted vehemently that the doctor give me some whisky to prevent it.

The next afternoon I heard a sharp *pop* on deck, but it was not very loud, and I did not pay much attention to it. A few minutes later I saw a curious shape on deck, with a Union Jack over it, and I found it was a gunner's mate, just killed by the accidental discharge of a revolver.

A few days later we got under way, and two days afterward we anchored at Shanghai. Our boilers had been complaining for a long time, and we knew that they had to be repaired; the captain had reported so, and this was the reason of our coming.

About two weeks after reaching Shanghai the surgeon and I took dinner on board an English war-ship. When we got back on board the *Petrel*, the doctor went down to his room, and I stayed on deck and talked for a while with Fermier. Fermier said that he felt very badly, that he did not think he had ever felt so badly before in his life. I said that I would go down and call the doctor before he turned in, but Fermier objected, and said he would be all right in the morning. I soon came to feel, however, that Fermier was really ill, and so I went down and told the doctor, against Fermier's protests.

Supposing that Fermier was only temporarily ill, I turned in; but I can remember now that before I got to sleep I became aware of a slight noise in front of my door, and opening my eyes, I saw the doctor going by

with his left arm around Fermier, who had his head on the doctor's shoulder. The next morning Fermier was unconscious. The doctor pricked him with a pin, but there was no response. The captain then had a signal made to the *Monocacy* for her doctor, who came to the *Petrel* at once. He agreed with our doctor that it was a case of apoplexy. Fermier died that evening painlessly. Two days after, his body was cremated in Shanghai, and all the officers and men in the ship who could went to the last services over the body of our dear messmate.

We had been together, the whole mess, for nearly two years, and there had not been any break up to this time. We had been through many dangers, and had had together many of the strange experiences that are frequent in the lives of naval men; so this sudden death of the strongest man in the mess was a great grief and shock. The grief to us in that little inclosure, which was our temporary home, but just as much a home at the time as any home is home, was such as no one can understand who has not had experiences like it.

Mrs. Fiske and Mrs. Hall joined us in Shanghai, and we stayed there about a month. During this time the Taotai gave a ball in his palace. All I can remember of it is a dazzling lot of uniforms of different kinds, a great number of mandarins, and the fact that the Taotai changed his costume five times during the evening.

Not long after this the Scots of Shanghai gave a Caledonian ball in the Astor House. My wife and I had never been to a Caledonian ball before, and we were much interested in the extraordinary dances that the Scots performed. The way the Scots danced, men and women, showed that they had great vigor and strength. We left about half past two; but some time near daylight the following morning I was partly wakened from my slumbers in the Astor House by a large chorus of manly voices, not altogether in harmony, singing, "He's a jolly good fellow." We heard afterward that, besides the regular supper that occurred about half past twelve, the real

Scots had another one about half past three; and that about half past five they started out to serenade various prominent people of Shanghai. The last serenade came off at about eight o'clock in the morning; but by this time there were only two left of the original party of twenty to sing the serenade, if singing it could be called; the other eighteen had literally "fallen by the wayside," and been carried home by coolies.

Our stay at Shanghai was extremely pleasant, and the most pleasant part of it all was to see the way we were treated by everybody. As Americans we had been used to being treated well by Americans, Frenchmen, Italians, and people from South America, but we had not been used to being treated well by the English or the Germans, at least not as equals. Now we recognized a distinct change in their attitude toward us and we knew why. We knew that many people had expected that the Americans would be whipped by the Spaniards, or that, if they were not whipped by the Spaniards, the powers would see that they were not allowed really to whip the Spaniards. And when these people found that we really had whipped the Spaniards and had gotten possession of Manila and Manila Bay, with every prospect of getting all the Philippine Islands and some of the West Indies and of becoming a power in the world, their manner toward us changed and Consul Goodnow smiled now when he told how Prince Henry had said to him that even if the United States should get Manila, the powers would not allow the United States to keep it.

We got back to Manila Bay a few days before Christmas, and had that strange feeling that comes to everybody when he returns to a place that has been very familiar to him after having received very strong impression in his absence of other scenes: I mean that strange feeling of surprise at finding things so unchanged, that strange feeling that he has not been away at all.

But we found that changes were to happen in the little

with his left arm around Fermier, who had his head on the doctor's shoulder. The next morning Fermier was unconscious. The doctor pricked him with a pin, but there was no response. The captain then had a signal made to the *Monocacy* for her doctor, who came to the *Petrel* at once. He agreed with our doctor that it was a case of apoplexy. Fermier died that evening painlessly. Two days after, his body was cremated in Shanghai, and all the officers and men in the ship who could went to the last services over the body of our dear messmate.

We had been together, the whole mess, for nearly two years, and there had not been any break up to this time. We had been through many dangers, and had had together many of the strange experiences that are frequent in the lives of naval men; so this sudden death of the strongest man in the mess was a great grief and shock. The grief to us in that little inclosure, which was our temporary home, but just as much a home at the time as any home is home, was such as no one can understand who has not had experiences like it.

Mrs. Fiske and Mrs. Hall joined us in Shanghai, and we stayed there about a month. During this time the Taotai gave a ball in his palace. All I can remember of it is a dazzling lot of uniforms of different kinds, a great number of mandarins, and the fact that the Taotai changed his costume five times during the evening.

Not long after this the Scots of Shanghai gave a Caledonian ball in the Astor House. My wife and I had never been to a Caledonian ball before, and we were much interested in the extraordinary dances that the Scots performed. The way the Scots danced, men and women, showed that they had great vigor and strength. We left about half past two; but some time near daylight the following morning I was partly wakened from my slumbers in the Astor House by a large chorus of manly voices, not altogether in harmony, singing, "He's a jolly good fellow." We heard afterward that, besides the regular supper that occurred about half past twelve, the real

Scots had another one about half past three; and that about half past five they started out to serenade various prominent people of Shanghai. The last serenade came off at about eight o'clock in the morning; but by this time there were only two left of the original party of twenty to sing the serenade, if singing it could be called; the other eighteen had literally "fallen by the wayside," and been carried home by coolies.

Our stay at Shanghai was extremely pleasant, and the most pleasant part of it all was to see the way we were treated by everybody. As Americans we had been used to being treated well by Americans, Frenchmen, Italians, and people from South America, but we had not been used to being treated well by the English or the Germans, at least not as equals. Now we recognized a distinct change in their attitude toward us and we knew why. We knew that many people had expected that the Americans would be whipped by the Spaniards, or that, if they were not whipped by the Spaniards, the powers would see that they were not allowed really to whip the Spaniards. And when these people found that we really had whipped the Spaniards and had gotten possession of Manila and Manila Bay, with every prospect of getting all the Philippine Islands and some of the West Indies and of becoming a power in the world, their manner toward us changed and Consul Goodnow smiled now when he told how Prince Henry had said to him that even if the United States should get Manila, the powers would not allow the United States to keep it.

We got back to Manila Bay a few days before Christmas, and had that strange feeling that comes to everybody when he returns to a place that has been very familiar to him after having received very strong impression in his absence of other scenes: I mean that strange feeling of surprise at finding things so unchanged, that strange feeling that he has not been away at all.

But we found that changes were to happen in the little

lives of four of us, and they happened in a very few days. The captain was detached and sent home, Hughes was sent to the monitor *Monterey* as executive officer, Hall to the *Concord* as chief engineer, and I to the monitor *Monadnock* as navigator.

We had now been in the ship two years, and the only break had been Fermier's death. So it was with a tight feeling in the throat that I got into the steam launch with my uniforms and sword on the afternoon of December 31, and shoved off from the little *Petrel*.

CHAPTER XX

OUTBREAK OF THE FILIPINO WAR

IN the afternoon of the eleventh of January the *Olympia* gave a little dance. I went up to Manila and brought my wife and daughter down, and we all danced to the music of the *Olympia's* band, under awnings decorated with flags; and we could look through the openings between the flags and see the merchant ships and warships of all the nations, and the American flag over Manila.

About five o'clock the admiral's aide, Scott, came to me and said that the admiral had just signaled to the *Monadnock* to go in and anchor off Fort San Antonio and clear for action, but that she was not to go until after dark, because the Filipino insurgents would see her go.

At six o'clock the ladies started back to Manila in a steamer, and we of the *Monadnock* got into our boat and went to the *Monadnock*.

We were very quiet at dinner that evening in the *Monadnock*, for we knew that we might be on the verge of war. We knew that at the first shot fired between the American and the Filipino lines war would begin; and we knew that if war did begin, it would be that most heart-rending of all wars, next to civil war, a war of subjugation.

About nine o'clock, that evening we picked up the *Monadnock's* anchor very quietly, and headed in toward Fort San Antonio. The night was very dark, and it was somewhat difficult to see where we were going, and especially to avoid the fish-stakes and nets. Lieutenant-Commander McCrackin was in command; he stood in the bow, and gave his orders in regard to the helm and engines to me on the bridge.

The next morning we found that the alarm of the day before had been a false alarm, at least for the present. But the *Monadnock* was got into position near Fort San Antonio, and cleared for action.

I received permission to go ashore that afternoon, and I went up to Manila. About four o'clock my wife and I drove down in a *carametta* to Fort San Antonio to look at the arrangement of the fort and the American and Filipino trenches near it. I thought it would be interesting to both of us, and that even a slight knowledge of the intrenchments might be of assistance to me if the *Monadnock* should have to open fire.

The next day my wife and daughter left in the *King Sing* for a trip through India and Egypt, and I went back to the *Monadnock*. The *King Sing* went out just before evening, and as she got over toward the west, I could see her form outlined with intense distinctness against the background of a gorgeous tropical sunset.

For two or three weeks nothing happened to break the subdued tension of the situation. People went to and fro in Manila, shopkeepers plied their trade, and to a casual observer everything looked peaceful except the sentries pacing at frequent intervals in the streets, regiments of soldiers drilling, and the keen, watchful look on the face of everybody; for everybody knew that all through Manila there were thousands of Filipinos who hated us just as much as did the armed Filipinos who surrounded the city.

On the afternoon of February 3, I went up to Manila in my capacity as caterer of the wine mess, and went out to the beer brewery to get some beer. After doing this I went to the Hotel de Oriente to see how some of the ladies who were my friends were feeling. I found that they were in a state of repressed excitement, but seemingly fearless. I was about to leave to go back to the *Monadnock*, when Mrs. Hall and Mrs. Peterson, wives of officers, asked me to take dinner with them at the hotel. I was very glad to accept, though I knew I should

get a wretched dinner; but our opportunities for feminine companionship were few, and had to be seized when they came. One of the ladies had a pleasant parlor on the corner from which a very good view of the large plaza in front of the hotel could be got. So after dinner we three sat in this room and enjoyed the sight of the moonlight resting softly on the large buildings and the fountain in the plaza, and the sound of an occasional piano or guitar. One of the ladies said:

"How peaceful everything seems, and yet how peaceful it is n't!" and she pointed down the street.

There in the dim light could be seen in the distance a dark, regular mass of men that swayed slightly from side to side with a periodic motion. It was advancing toward us. At intervals in the mass were little streaks of light that seemed as if reflected from bayonets and swords. Then came the muffled cadence of a marching step, and a faint, metallic clatter of accoutrements, keeping time with the step, as a thousand footfalls struck the ground together. Nearer came the American regiment. The sight and the sound grew clearer. Then the regiment passed beneath our window, with the rhythmical, echoing foot-beat, unrelieved by music, and the set faces, and the grim suggestion of war and all war means. Then the sight and the sound died slowly away and the quiet place was as it was before.

The effect on the ladies was at first reassuring, but afterward distinctly disquieting. I asked them if they felt frightened, and they said, "No." I told them there was nothing to be frightened at, yet I did not feel that I was telling the precise truth. One of them said:

"We 're not frightened exactly, but, then, it is n't altogether pleasant. I believe myself that there really is danger, but I don't know; everything 's horribly uncertain. We all know that thousands of Filipinos here would like to kill us, and we are entirely unprotected. We can't trust even the doors of our room or the bolts. Any Filipino could break in any of these

doors. All the servants in the hotel are Filipinos, and we are entirely alone among all of them. We 're waiting every minute for the sound of a rifle, and when it comes we 'll know what it means."

The other lady said:

"Oh, I don't think there 's any danger at all. The Filipinos are afraid of the Americans and they 'll never rise against them. They 'll talk and bluster, but they 'll never really try to fight them."

"Yes," said the first speaker, "perhaps their leaders would n't want them to, but suppose that any Filipino along this line of intrenchments gets into a fight with an American soldier and fires his musket at him; don't you suppose that both lines will be in battle in less than five minutes, and do you imagine the thousands of Filipinos in Manila are going to do nothing when that happens? Now, I don't like to say that I 'm afraid, but sometimes I wake in the night and think I hear a noise in the hotel and a rifle-shot. I tell you it 's awful."

I had a feeling, not unpleasant, that these ladies liked to have me there; that my uniform gave them a feeling of protection, though I knew that I was just as helpless as they, for I had not even a penknife as a weapon. I said that I thought there was no real danger, at least for the present, but that I felt sure that there would be danger in time, and that I thought they ought to leave Manila as soon as they could. Then we went down to the plaza to shake off the nervous feeling that had taken possession of us, and enjoyed the beauty and quiet of the scene. When I walked back with them to the door of the hotel and bade them good night, and the door of the hotel closed after them, I felt that they were going into danger.

I got a carriage and drove through the moonlit streets. I told the driver to go slowly, for it was an intense pleasure to watch the moonlight and the shadows on the streets and on the buildings and the churches, and to imagine to myself the dark plots going on beneath those roofs

that now looked so very white and peaceful, and then imagine what would happen if one rifle-shot rang out.

I soon got abreast of where the *Monadnock* lay, to a place where there were Filipino boats. But I could not find any Filipino boatmen. This gave me an unpleasant feeling; but I walked about, and soon found a sentry. I told him my plight, and he called for the corporal of the guard. The corporal said:

"All right, sir; I 'll find you a couple of men." He went away in the darkness, and soon came back with two Filipinos, and they took me down to a canoe. On the beach the corporal said to me quietly:

"Are you armed, sir?"

"No, I have n't a thing."

"Well, I would n't trust these fellows, sir; perhaps you 'd better pretend that you are armed."

The Filipinos motioned me to get into the bow of the canoe, but I said, "No, I 'll sit in the stern," for I had no desire to have one of them hit me over the head from behind with his paddle. So I sat down in the stern and made them sit forward with their backs to me, and I let them see that I had my hand behind my right hip, as if I had a revolver.

The *Monadnock* lay about three quarters of a mile from the beach, and I could see her low, black hull and her turrets and her military mast grimly outlined against the sky. She seemed powerful and awful in the night, and when I got on board I took pleasure in fancying that I was entering into the welcome protection of some benignant monster.

The next day was very dull during daylight, but about eight o'clock in the evening, while several of us were standing on the bridge trying to get what little air there was, watching the lights and the vaguely outlined buildings of the quiet city, suddenly and clearly came the crack of that rifle-shot.

The first sound came from the north, but almost instantly it encircled the entire city. We looked at one

another, and some one said, "That 's it." Then we listened to the rattle of the rifles, and the rattle kept increasing. Sometimes we could see flashes not very far away.

We sounded the electric alarm, and went to general quarters, and turned on our search-lights. We got up ammunition, loaded the guns, and went to our stations for battle. We swept the beach with our search-lights near Fort San Antonio. But we could see no signs of attack there from either side, and no boats; nothing but the smooth water and the fish-stakes and the sharp angles of the fort.

We waited in keen and almost silent watchfulness for an hour, but nothing happened. The sound of firing finally lessened, and then McCrackin decided that there was nothing more that we could do just then. So most of the men were allowed to turn in, though a large armed force was kept on deck. The engines were kept ready to move at a moment's notice, and all preparations were continued for battle.

The next day, Sunday, the fifth of February, the fight began in earnest all around Manila. The American army at once showed the difference that existed between the American idea of fighting and the Spanish idea of fighting. I mean that the American army at once prepared to advance and in all directions. All the troops stationed in the southern part of Manila, where the *Monadnock* lay, occupied at once the line of intrenchments that ran from Fort San Antonio east to Block-house No. 14, facing the Filipino intrenchments on the other side of the little river.

The duty of the *Monadnock* was to support Fort San Antonio and to shell the ground south of her, over which the American troops were to advance. We were within musket-range of the insurgents, and we could plainly see the white hats that they foolishly wore. In the forenoon and the early part of the afternoon they fired a good deal at the *Monadnock*, but only two of our men were

hit. One of them got a very curious wound. He was standing at the forward hatch, facing aft, with his head turned down on the left side. A Mauser bullet, coming down, entered his right cheek, passed through his jaw on the right side, went under his tongue, under his jaw on the left side, through his neck, entered his left shoulder behind his collar-bone, and finally lodged in the muscles behind his shoulder, whence Surgeon Steele extracted it.

We found some difficulty in the *Monadnock* in reading the army's signals and making sure we were firing right; and we feared, of course, firing into our own soldiers. So I asked the captain to let me go ashore and see the officer in command on the fort, and arrange a system of signals by which we would know how to fire. He gave me permission, and so I got into a steam launch, and had it tow a dinghy toward the beach. I did not steer directly toward the fort, because I knew that the right of the Filipino line went northeast, parallel to the American line beyond Blockhouse No. 14, and that they were firing toward the west; so that if I went directly toward the fort, I should be in the line of fire and in unnecessary danger of being hit. So I headed somewhat north of the fort until the water began to shoal; then I got into the dinghy, and pulled in to the beach until the keel touched bottom. Then I had two sailors carry me to the beach, for I had a new pair of white shoes on.

The beach was flat for about twenty feet back from the water, where it met a line of little sand hills about three feet high. I told my two men to lie down and wait for me, and then ran down the beach toward the fort. Pretty soon I heard bullets singing over my head, and then I crouched down and ran along, doubled up, behind the sand hills. I soon reached the northern wall of the fort. I ran along it, and in a few moments more ran into the gate.

I found the fort full of soldiers, with their muskets in their hands and their belts on, but sitting or lying down. I found the commanding officer near a telegraph

instrument. He had just received a report from somewhere. I do not remember exactly what the report was, but I remember that part of it was that "the barefoots were running in all directions." This news was given to the men in the fort, and they received it very quietly.

After arranging a simple system of signals with the commanding officer about how the *Monadnock* was to fire I went up on the parapet. It was rather exciting there, because bullets from Filipino sharp-shooters using smokeless powder were coming over fast, and one could only hear the singing of the bullets, without seeing any smoke; so I stuck my head cautiously over the top of the parapet, and there, looking to the east, I could see our line of intrenchments running eastward to Blockhouse No. 14. Our men were lying down behind them, but some of the officers were on horseback. They were just preparing to make an advance, and so I stayed there awhile, watching them. In a few moments I heard a dull, shuffling noise in the fort and looking behind me, I saw the men in the fort slowly and gravely falling in. I was surprised to see the quietness with which they did it. There was no apparent enthusiasm and no bravado, but instead a determined calmness. They were all volunteers. Nine tenths of them had never heard a bullet whistle before to-day. They were ordered to advance toward an enemy, of whom they knew nothing except that they were brave and cruel. They did not know how many there were, but they knew that there might be a very great many. I saw these men march out of the fort, and fall in line outside the fort in line with the intrenchments. They walked out steadily, with fixed faces, some very pale.

I saw it was time for me to get back to my ship, so I ran to my boat, and I was quickly towed to the *Monadnock*. I had scarcely reached her when the army signaled that they were ready to advance. Then the *Monadnock* steamed slowly toward the south, firing her ten-inch and her four-inch guns and her various rapid-fire

guns, ahead of the American advancing line, whose right rested on the beach, and was marked by a red flag. By watching this red flag we were able to tell how far the line had advanced.

The land into which the army marched was thickly wooded and had been full of insurgents. Before we began to fire we could see a long line of straw hats over the Filipino intrenchments facing the north, but they quickly disappeared after the *Monadnock* began to fire. The light bullets of our soldiers were very ineffective against the deep, thick underbrush and the trees; but the five-hundred-pound shell of the *Monadnock* crashed through them, and we heard afterward that most of the damage done was done by her guns, and that her ten-inch shells did more good in driving the enemy back than anything else. Her fire was so effective, in fact, that our soldiers found much less resistance than they expected, and that night got as far as Pasai. But there was great loss of life on both sides. In one spot near Blockhouse No. 14 there were found twelve American soldiers killed and forty-one wounded. The *Monadnock* and the *Charleston* took up positions abreast of Pasai as supports, and all that night there was much signaling from the shore to us and from us to the flag-ship.

The fire of the *Monadnock's* guns that day was extremely accurate, and this was due principally to the telescope sights with which the guns were fitted. This was my first opportunity to observe their usefulness in war, and I felt a pride, which I think may be pardoned, in seeing my invention work so well—my despised invention, long condemned by the navy and by naval officers, for whose sake I had endured those years of misunderstanding that, I hope, none but inventors ever know.

Trouble developed later in understanding the signals from the army telling us how to fire. They had now advanced to the town of Caloocan, but the distance from the *Monadnock* was so great that the flags could not be

seen clearly, and altogether the signaling was not at all satisfactory. Captain Russell of the Signal Corps, recently from West Point, came on board and asked me if I could not arrange some plan for signaling between the *Monadnock* and Caloocan by wireless telegraphy. He said that he had plenty of wire and batteries, and that he thought probably the *Monadnock* had some mechanics who could make the apparatus, which would be rather simple. He said that if I would furnish the knowledge and the mechanics, he would furnish the material and the men to use the apparatus. We talked over the matter for a long while, but finally concluded that neither of us had the time to make the necessary experiments. I finally suggested to him that I should give him a chart which was like the one the ship used, and that both on this chart and the ship's chart I would mark the position of the ship and of the church at Caloocan, so that if the army at any time wished a shell landed at any point, night or day, all he, the signal captain, would have to do, would be to measure the distance and direction of that point from Caloocan, and signal it from Caloocan to the *Monadnock*. I would then mark that point on our chart, and measure its distance and direction from the *Monadnock*; and then we would simply fire at that point, as it was not necessary to see it. I told Russell that I could arrange by means of spirit levels that this could be done by night as well as by day, because the *Monadnock* hardly moved in the still water. We submitted this plan to the captain of the *Monadnock*; he approved it, and we used it successfully on several occasions afterward.

A few days after that, while we were lying at about the same place, off Malabon, the quartermaster reported Admiral Dewey's barge coming that way. The admiral came alongside, and all the officers who were on the quarter-deck at the time, and there happened to be several, stood at attention and saluted as he came on board. He had just received his promotion to the grade of admiral, and we stared with wide-open eyes at the four

stars and the anchor, which only two men in American history had ever worn before. He stepped on to the deck, and as we saluted, he returned our salutes with a mixture of perfect official precision and good-natured ease. He greeted each of us in turn, calling each by name, and then remarked that he would like to see the firing of the *Monadnock* from her bridge. At this time we were firing by the method I have just spoken of. He remained on the bridge two or three hours, watching the firing and the signaling, and was kind enough to say that he was pleased with the results.

But he did not like the way the turret moved under its hydraulic power. He turned to me and said:

"Look how that turret jumps, Fiske; we can turn turrets much better by electricity, can't we?" with a smile, knowing that I had been employed for a long time in trying to turn turrets by electricity, and that a successful trial had recently been made in the *Brooklyn*.

Admiral Dewey left the ship soon afterward. When about to go over the side he faced around, and, with his hand at the visor of his cap in military salute, smilingly bade us good afternoon, looking each officer in the eyes, and making a courteous inclination of the head to each as he did so.

A day or two later a lady told me that she had heard there were some Igorrotes confined as prisoners at the arsenal, and that she wished she could go and see them as well as the other things in the arsenal. So the next morning I took her to the arsenal and showed her the old Spanish guns and other curious things. Then we walked out of the main gate to the parade-ground, which we found full of our troops, drilling. Fort San Felipe, where the prisoners of war were confined, was on our right; and we went in one of its gates, cut through a high and thick stone wall. We found ourselves in a very large yard, in which were a few of our soldiers stationed as sentries and several hundred Filipino prisoners. Some of them were dressed in the simple uniform of the

Filipino army, a straw hat, a shirt, and a pair of trousers of a thin material, with white and blue stripes. But many of them were not dressed in uniform, and had on merely a shirt and a pair of trousers, the shirt worn outside of the trousers, as is the Filipino style. There were many women there, who had been allowed to come and see their friends, and most of them wore bright skirts and waists, but were barefooted, like the men.

We asked to see the Igorrotes. We had heard of them as being very fierce warriors, who wore large head-gear and feathers, and who fought ferociously with spears and clubs and bows and arrows. The sentry pointed to a group of little men, almost naked, and said, "Those are the Igorrotes." They looked stupid, and had no head-gear except their own short, black hair, and were very commonplace and disappointing in appearance. They belonged to a tribe that the Tagals, the dominant tribe of the Philippines, had forced to fight with them against the Americans.

The Filipinos in the yard seemed to be in very good spirits and very good condition, and to be much interested in the cooking going on in several parts of their prison; and it occurred to us that perhaps they were extremely glad to be in a safe place, and to have plenty to eat and no work, instead of marching from place to place in the heat and the mud, always in danger, with a great deal of drilling to do and very little to eat.

After satisfying our curiosity about the Filipino prisoners and the Igorrotes, my companion and I walked to the quarters formerly occupied by the Spanish commandant of the fort and his family. We found it a very comfortable house, situated on a high hill, and a very good view could be got from its piazza of Manila Bay and city. The house was in a good deal of disorder, and on the ground floor I picked up three things. I gave two of them to my companion, and I kept the other. One was a Spanish prayer-book, another was a pair of ladies' stockings that seemed to be new, and the other was a very pretty lace handkerchief.

Looking over on one side from the second story, we saw a dark passageway. We went along it, and finally came to a flight of stone steps. We went down these, and after perhaps fifteen or twenty steps came to an opening in the stone wall about the size of an ordinary window, and looking through this we saw that it opened into a kind of little chapel. The dark stairway descended still farther, winding a little, and we went down it. It brought us to a plot of ground perhaps about thirty feet square, inclosed by very high walls; and in it, near one of the walls, was a well that looked very nasty. What this well was intended for I have never heard. The ground was covered with damp, coarse grass and the place was far from being attractive; so we retraced our steps, going back up the winding, dark stone steps, inclosed by solid, damp walls.

We felt relieved when we got up into the fresh air again, but in a few minutes we started on another tour of inspection, and we soon came to a curious stone structure that seemed to have no entrance except through a hole about two feet square at the top. I looked down this, but could see nothing except the space inclosed by the wall, the top, and the bottom, which was perhaps twenty feet square. The locality was damp and half dark, and suggested dungeons and other unpleasant things, so we walked out into the fresh air and out on the parade-ground. My companion was tired now and a little unnerved, and seeing a beautiful church on the opposite side, she suggested that we go in and sit down. The idea of resting in the yellow light of ecclesiastical windows seemed pleasant, after our contact with a dungeon; and so we turned, as many people in all ages have turned, to the church. But just as we were about to enter we heard running footsteps behind us. In a moment a young officer, almost out of breath, overtook us and called out:

“For God’s sake! don’t go in there! That ’s the small-pox hospital!”

CHAPTER XXI

ADVENTURES IN A MONITOR

THE next morning we got under way for Hong-Kong, looking forward with delight to a change of air and scenery. We steamed down near the flag-ship, and some of us got into a boat and went on board for physical examination for promotion. The surgeons got through this pretty soon, and about five o'clock the *Monadnock* steamed toward the opening of Manila Bay.

Although we were very glad to go to Hong-Kong, where we should find pleasant things and civilized life, we looked forward to the trip with no pleasure. We knew that the northeast monsoon, which had made it unpleasant for the *Petrel*, was still blowing, and that beyond the graceful curves of Corregidor Island and the smooth water that surrounded it the ocean was extremely rough. Most of us had never been at sea in a monitor, and we did not trust monitors very much. The admiral had told Captain Nichols that he would send another ship to convoy the *Monadnock*; but the captain was far from being a timid man, and he had asked the admiral not to do that, but to let the *Monadnock* go alone.

I cannot say that any of us were really anxious about the result of the trip, but I think we all felt that we should be glad when it was over.

We steamed out of the bay about eight o'clock, and I went up on the bridge and stayed there for a while, and watched the small waves dash against the side of the *Monadnock*, and then roll gently across the deck in the moonlight. It was a very pretty sight, and I stayed there a long while, watching the breaking up of the water by the massive monitor, that some people said was like a raft and other people said was like a flat-iron.

The next day the water began to get rough gradually, and we knew that we were getting toward the place where the large waves were. During the next night the *Monadnock* began to roll with the quick, regular, pendulum-like motion of the monitor, and we knew that the next day we should be in a heavy sea.

The next morning it was raining heavily, and I awoke to hear the sound of water falling on the superstructure over my head. I could hear it rush down to the port side when the ship rolled to port, and then rush down to the starboard side when the ship rolled to starboard. I looked out of my port-hole and saw, higher than my head, the white tops of waves.

I knew that there was no chance of my getting an observation of the sun, because the sky was covered with clouds, and so I did not hurry to get on deck; but finally I went up there. Werlich was officer of the deck, and he looked so big and handsome in his yellow oilskin suit that it was a pleasure to be near him. We stood on the weather side of the bridge and watched the waves. The wind and the waves were coming from the starboard side and a little from forward. The bridge was perhaps twenty feet above the hull of the monitor and ten feet above the superstructure, and it was supported by a number of iron braces. I remember I said to myself as I climbed the ladder leading to the bridge that it looked like a very flimsy bridge, with those enormous waves behind it as a background.

When the *Petrel* was out in this same kind of sea, she had acted like a little horse in a canter; and whenever an enormous wave seemed about to engulf her, she would rise as if jumping over it. But the *Monadnock* acted more like a plow than like a horse. She seemed to poke her steel nose down into the water, and she would not rise at all. The *Petrel's* bow was high and buoyant, so that the effect of a wave rising under her bow was to lift it; but the *Monadnock's* bow was only about two feet above smooth water, so that when a large wave came, it

simply fell on the bow, and pressed it down, instead of lifting it up. The sight of this to persons not used to it was awful in the real sense of the word—the sight of this big steel monster forced along by powerful engines through waves that tried to sink it.

It is the idea of many people that the waves of the ocean are simply water that is undulating, and that has no forward motion as a mass; whereas it has real forward motion as well as up and down motion. Let any one blow on the surface of water in a basin, and he will see that not only does the water form in little waves, but the water on top is shoved along by the force of his breath. Water has weight and mass as well as any other matter has, and, when moving, it has momentum and energy; so that when it strikes anything, it exerts force against it. Now, in the case of waves coming toward a ship, and the ship advancing toward them, not only do the ship and the waves collide, but, when the bottom of a wave strikes a low ship like the *Monadnock*, the bottom of the wave is forced to stop, while the top of the wave keeps on moving just as before; and it rushes along the deck with great speed and power.

When the steel turret of the *Monadnock* received the impact of heavy waves at times that morning, it did not seem to us that the turret could stand it. But the spectacular effect was fine. I do not exaggerate when I say that sometimes the waves on the forecastle were ten feet high. Right under our eyes we could see the circular top of the turret, but the rest of the turret was shrouded by thick, white waves of water in violent ebullition.

We were looking down at this spectacle and commenting to each other on its beauty when Werlich suddenly cried, "Look out!" I looked, and saw an enormous wave strike the superstructure below the bridge, and then it seemed to me to rise into the air. Werlich and I turned our backs quickly, and caught hold of the heavy brass railing that ran along the after end of the bridge. Just

then the *Monadnock* gave a roll down to port, and at the same instant we received a violent blow on the back.

I felt the railing yield, and I wondered helplessly whether I should be thrown down on the hard steel deck or down into the sea; but it was all over in a few seconds, and we straightened ourselves up. We saw that the railing of the bridge against which we had been pushed had been bent. Werlich laughed outright and cried:

“Isn’t this splendid?”

“No, I don’t think it is,” I replied.

All that day we rolled monotonously from side to side. In an ordinary ship, in a gale, the motion is uneven: the ship will pitch, then roll, and then do both at once; then there will be a jar, and the ship will shake; then she will make a few heavy rolls; then there will be a lull; then she will do the same things all over again. The motion is fantastic, and one finds himself guessing all the time what is going to happen. But in the monitor we rolled down to starboard, down to port; down to starboard, down to port, with the regularity of the pendulum of a clock, and it was exasperating beyond words.

That night, perhaps about nine o’clock, I went up on the bridge to see how the forecastle looked at night under the waves. I watched the white, restless mass, now shallow, now deep, rush along the deck right at the turret, as if it would sweep the turret off the deck. I saw it break against the calm mass of steel, then rise high into the air. Right under me on the port end of the bridge this water would roll off into the sea. I kept looking at this until my nerves got into a tingle. Suddenly a voice whispered into my ear:

“Did you ever feel like committing murder?”

I looked to the right, and saw a man standing close by me, with his bright eyes on mine. My whole body felt like cold jelly, but I managed to reply:

“No, I never did.”

“Well, I have; and what’s more, I feel like it now, right now.”

It occurred to me that the man must be insane, and I had read that the worst thing to do with an insane man is to seem to be afraid of him. So I pulled myself together with a violent effort and said:

"Do you feel like killing any one in particular or do you want to kill just anybody?"

"I don't care who it is; but I've got to kill some one. I must do it; that's all."

I saw that I was helpless, for it would be very easy for a maniac, as this man seemed to be, to pitch me off the bridge into the water, and it was useless to call for help in that loud wind. I said:

"I shouldn't think there'd be much fun in that."

He stared at me, and a crumpled piece of paper dropped out of his hand. The bridge where he stood was curtained with canvas, so the wind did not blow the paper away. It suddenly occurred to me that the quickest way to impress this man would be by pretending that I had perfect confidence in him. So I leaned down, putting myself frankly at his mercy, picked up the paper, and handed it to him, saying:

"You didn't seem to notice that you dropped this."

He looked into my eyes for so long a time that I could hardly bear it; then he turned his back quickly, and walked off. As soon as I saw the way clear, I ran down the ladder that led from the bridge, staggered along the unsteady deck and down the unsteady ladder to my room, and locked the door. That night I slept with my door locked.

We did not get to Hong-Kong until the fifteenth. This miserable trip lasted six days. But on the afternoon of the fifteenth we steamed in between the mountains that line the entrance to Hong-Kong, and the next day we went into dry-dock.

The change from the depressing climate of Manila to the healthful climate of Hong-Kong was delightful, and so was the change from shooting Filipinos to talking with ladies in their pretty robes.

One afternoon I walked on the Plantation Road. The air was fresh and vivifying, and sent a strange stimulation through the blood. There was an element in the breeze that entered into the lungs and made life sweet to live.

One warm evening I dined at the house of Mr. and Mrs. Bolles, high up the mountain-side, and after dinner we sat on the piazza; and the soft music, the tropical foliage, and the graceful costumes of the ladies imparted a dreamy, enervating, luxurious feeling. Then I got into my chair, which had one long pole on each side, and the chair was picked up by four coolies. I had a long, slow, swinging ride down the steep, curving pathway, amid trees and shrubbery of all kinds, and I could almost feel the moonlight coming down on me through the leaves; while below I could see through the trees and the leaves the countless lights of the city and, farther out, the lights of ships at anchor in the bay.

The next afternoon the ship's cook acted strangely, but did not seem to be intoxicated. As the surgeon was on shore, our chief medical adviser was the apothecary, and I had him investigate the case. He reported that the man was crazy, and that it would be rather severe to put him in irons; that, in fact, it might make him worse. He added that he could give the cook a drug that would make him quiet. He gave him the drug, and then I had the cook put into the galley, or ship's kitchen, and had the doors locked on him, the master-at-arms first taking away all such things as knives with which he could harm himself. About ten o'clock I was standing alone on the after end of the quarter-deck when suddenly I saw rushing toward me the cook, virtually naked, waving in his hand a big iron fork about two feet long that he used for handling the meat when he was making soup. He did not seem to see me; but he began running about near me, brandishing the fork, which was heavy enough to kill a man, and executing a kind of clumsy dance. Fortunately, the master-at-arms discovered his escape in a few min-

utes, and he, with several others, came running aft, and quickly overpowered him. The cook made a frantic resistance; but when I ordered the master-at-arms to put him in irons and chain him to the deck, he collapsed and began to weep. His insanity was cured from that hour.

The trip back to Manila was as pleasant as the trip to Hong-Kong had been unpleasant. The ocean was just rough enough to give "the old flat-iron" an easy motion, and to make beautiful effects of torrent and waterfall as the white sea rushed along her decks and overboard.

The next day, after reaching Manila, while I was writing to my mother, and telling her that I did not think that there would be any more war, the orderly came to me and said:

"Sir, the captain wishes to see you."

I went to the cabin, and the captain told me that he had just received orders to go down at once to a position off the town of Paranaque, about four miles south of where we were. He said the admiral had received information that the Filipinos who had been driven south by the army from their intrenchments in front of Fort San Antonio had assembled at Paranaque in number about five thousand, facing our forces at Pasai, which were much inferior in numbers. The *Monadnock* was to go to Paranaque and try to drive the insurgents out. The insurgents were said to be armed with the most modern rifles, and to have smokeless powder and several field-pieces.

So I was to go into battle again, after writing that I was not, and the curious part of it was that the day was Sunday, while the battle of the first of May had been on Sunday, and so had the battle of the fifth of February.

We cleared ship for action, and at three o'clock we weighed anchor, and steamed slowly south towards Paranaque. We looked forward to this adventure with much interest, for we did not know what we should meet; but we felt proud that the old *Monadnock* was still to hold her position as the fighting ship. All during the Filipino

War she had been the only ship that had done any fighting at all.

We steamed slowly to Paranaque this bright, hot Sunday afternoon, and then stopped abreast of the town, motionless. The water was flat, and there was almost no breeze. For a while there was not a sound. Several of us were on the bridge. The men at the ten-inch guns in the turrets, and at the other guns in the fighting-tops and on the superstructure, were at their stations, their nerves at battle tension; and they were kept waiting, waiting. This condition lasted for several minutes, it was very trying to the patience. Suddenly there broke out a tremendous rattle of musketry and the booming of field-guns, and we heard the singing of bullets and the whirring of heavier projectiles in the air, and the *ping, ping, ping*, as they fell into the water. Instantly, the *Monadnock* struck out with her four ten-inch guns and her four-inch guns and all her rapid-firers, and quivered in every part. The noise and concussion were tremendous. The bridge shook under us as if it would shake to pieces. In ten seconds smoke was all around us, and there was not breeze enough to carry it away, and while we heard the sound of projectiles passing through the air and falling into the water, we could see nothing. "Cease firing," sounded the bugle; then "Commence firing," when the smoke had cleared away; then, "Cease firing," when the smoke thickened, and so on. Finally, I noticed that what breeze there was, was coming from aft; and as most of the guns were abaft us, the breeze was blowing the smoke on to us; so I suggested to the captain that I go aft on the quarter-deck, where I thought there would be but little smoke, and send word to him of what was happening. He consented, and I ran down the ladder to the deck, then down, then along the armor passage below the water, and then aft until I reached the ladder that went up to the quarter-deck. I went up this ladder, which came through an opening in the deck. All around the opening was a steel coaming, or wall, about three feet high. I stepped

out on the quarter-deck and began to look toward Paranaque, when suddenly I felt myself pulled down violently behind the coaming. The pull was so sudden that it brought me to my knees. I was under considerable tension, and the sudden shock almost unnerved me; but I soon saw I was among several men who were crouching for safety in this place, and that the intention toward me was friendly, for one of them said:

“Don’t stand out there, sir; it’s no use.”

I got up and stepped outside, but I soon concluded that I could see just as well from behind the coaming. So I got behind it, and stood there with only my head exposed. The whole look of the scene on the shore had changed. We had seen a beautiful picture of a bright Sunday afternoon in a Spanish town, with its characteristic background of a noble church. Now there was not a person in sight. Three buildings were on fire, the church had a big ugly hole near the bell-tower, our projectiles were striking the beach in great numbers, and heavy clouds of dust, smoke, and flame were over everything.

I sent a messenger to the captain to say that the insurgent fire was very light now, and to recommend that he stop firing long enough to let the smoke clear away thoroughly, so that our gun captains could get a fresh start. He did this, and for two hours we fired very deliberately, aiming principally at the intrenchments; but knowing the tendency of soldiers of the Latin race to get inside of churches, we fired several ten-inch shots at the church.

It was extraordinary to see how little damage the ten-inch shell did, for the church was only sixteen hundred yards away, and I saw several ten-inch shells weighing five hundred pounds go almost in the front door and explode, and several hit the masonry; yet we could not see, when we had finished, that we had done very much damage to the church. We found afterward that our fire had driven the insurgents back from the beach, but we heard the most contradictory stories about what loss of life we

had inflicted. Some accounts put the loss of life very high, and other accounts very low; but the damage done to other things than people was certainly very small. This gave me another lesson regarding the small effect of ship-fire against cities. Our fire had been overwhelming against the town, and yet we had done no military damage, beyond driving back from the beach a few thousand men. We had not made them surrender, and we had not received any offers of money if we would cease bombarding.

The week following our little battle at Paranaque was excessively uncomfortable. The awnings were kept below, and fires were kept lighted in the furnaces, which were under the wardroom. The consequence was that we were baked with the heat all the time. If we went out on deck, we were smitten with the direct rays of the sun, with no breeze; and if we went into our quarters, we were in a temperature of ninety-three day and night. The insurgents kept coming back toward the ship in small groups, firing at us, and then running away. This was extremely annoying, for a man never felt like going out on deck, because he knew he might get hit. We fired a great deal more than they did, because we fired at a Filipino whenever we saw one. There seemed to be a field-piece about a quarter of a mile north of the church, and we fired at this frequently. We could see the insurgents gathered around it at intervals, but we could not tell whether they were working at the gun or simply strengthening their intrenchments.

One afternoon we saw about a dozen Filipinos working there. We got a four-inch gun ready, measured the distance by the chart, pointed the gun very carefully by the telescope sight, and fired. The instant before the gun fired we saw the insurgents plainly; a moment after, we saw a cloud of blue smoke exactly where the insurgents had been. The small cloud of smoke showed that the shell, which weighed thirty pounds, had exploded, and hurled its fragments in all directions. No insurgents

were to be seen, and no more were ever seen there afterward.

The two months from the last of March to the last of May were the most uncomfortable I have ever had in my life. I spent five months once in the Bering Sea, and they were stupid enough; but to be kept in a monitor with a temperature of 93 degrees day and night, with mail only once in three weeks, and that a month and a half old; to be shot at every once in a while, and never to know when one would be hit, and never to have any amusement or excitement at all, was far from jolly. The days were glary, and the nights oppressive. Sleep was almost impossible in our rooms, even with electric fans blowing on our naked bodies; and so most of us slept on deck. We of the wardroom put our mattresses on the quarter-deck, and slept there as best we could.

One morning Morton and I were taking our regular swim when Morton sang out:

"Sounds to me like a bullet."

"Me, too," I said.

We then noticed that a number of bullets were falling near us, and so we got out of the water and ran to our quarters. We ran past one man, who was struck exactly in the knee-joint. The surgeon said the man would never have a good leg again.

All this time the Filipino bumboat women used to come on board about half past seven every morning and sell fruit to the men. Morton seemed to arouse the liking of one of these women, a young and rather pretty woman, and when we came out of the water from our morning swim, she would offer him an orange or some other fruit, but she never offered me anything.

After two months of miserable life, spent in heat and desultory fighting, unrelieved by any pleasure or excitement, I was delighted to receive orders to join the *Yorktown* at Ilo-Ilo as first lieutenant.

CHAPTER XXII

ADVENTURES IN THE YORKTOWN

I LEFT Manila about one o'clock on the thirty-first of May, in the tiny gun-boat *Samar*, one of thirteen bought from Spain after the war. It was commanded by Ensign McFarland. We steamed out of the bay and headed toward the south. The afternoon was beautiful, and when we got outside, and met the pleasant southern breeze, and the gun-boat began to move about a little in a graceful way, I cannot tell the feeling of happiness I had. At last I was away from the oven in which I had been baked for two months; I was going to a new experience, I was going to a real ship, not a monitor, and I was to be executive officer, the second in command.

That evening at six o'clock three of us had our dinner on the quarter-deck, and I found that I had a natural appetite. I found that I felt alive and wanted to do things. Then I realized how baked and worn out I had become in the *Monadnock*. I slept delightfully on deck that night, and we spent the next morning in steaming swiftly through the beautiful straits and bays of the Philippines. On one green islet we saw a native leaning on his spear, surrounded by his family, just outside the door of his little home. He seemed as independent and prosperous as any man, and to have on his fertile islet, always under a summer sky, everything that a man needs to make him happy.

I found the duties of executive officer quite different from those of watch-officer or navigator. As watch-officer, one has to do duty for four hours at a time, and then is off duty a definite length of time. As navigator one has to do duty whenever there is duty to be done, but

the duties of executive officer require a "continuous performance." For instance, the first lieutenant sits down about one o'clock to do something; and just then the surgeon interrupts him with a lot of papers that concern the "first luff" very little, but which he must look over carefully and initial and send to the captain. The paymaster is waiting, and as soon as the surgeon is gone, he makes a request that the men of the crew be sent down to sign their names, with the officers of their divisions to witness their signatures. The first lieutenant begins to give the officer of the deck certain directions as to how and when to do this, and is half done when the chief engineer comes to report that coal-passer Smith has given out with the heat, and that he needs some one else in his place right away. Then the first lieutenant examines the "watch, quarter, and station bill" to find a suitable man, and the chances are that he gets a man who gives out with the heat on the very first watch. Then the captain sends out an order that he wants his gig immediately, and then changes his mind and orders a steam launch instead. Then the chief master-at-arms wants to know if he can let the barber shave the prisoners. Then John Jones comes and asks if he cannot go ashore to-day on liberty instead of to-morrow, because his friend Pat O'Flaherty of the *Monterey* is going ashore to-day, and they want to see each other. Then Lieutenant Plunkett of the *Petrel* comes to call, and when he is going, Lieutenant Werlich of the *Monterey* comes to call. Just then the orderly reports that the captain is coming alongside. The first lieutenant says a few choice words, buttons his collar to his undershirt, puts on his blouse and cap, and hurries out on the quarter-deck, and runs against the orderly, who is coming to say that the captain is only passing the ship in his gig. Then two parties of men ask permission to visit the *Monterey* and *Monadnock* respectively. Then the officer of the deck comes and reports that a signal is hoisted that he never saw before, and asks what he is to do about it. At that instant the captain comes on board

suddenly, and the first lieutenant rushes out on deck to receive him with his collar buttoned on one side only. The captain tells the first lieutenant to have the gun taken out of the steam launch at once. When this is half done, the first lieutenant receives an order that the captain wishes to have the gun left in, because an emergency signal is reported from another ship, but made in such an unintelligible way that he wishes him to have a signal sent back at once, asking what it means. Then the yeoman brings up a lot of papers to sign, and when the first lieutenant has just started in, the captain sends for him to find out if a certain gun-boat is at her station near the ship. Two minutes afterward he sends for him to ask him a question, and five minutes later sends out a letter, and says not to forget to send it to the flag-ship to-morrow at ten o'clock in the morning. And so on, and so on all that day; also the next day, and the day after that, including Sunday.

The *Yorktown* went to Manila in the latter part of June, and from there went to Hong-Kong, to go into dry-dock. I had made many trips to Hong-Kong, and had lived there quite a little, so that Hong-Kong had come to be the place that my memory held the most vividly. Even New York was not so clear to me as Hong-Kong, and as the end of my cruise drew near, I was surprised at the sentiment I had for it. And when we steamed through the grand gateway to that city, and anchored in the bay, I said to myself, as I had often said before, that Hong-Kong was the most beautiful place in all the world.

But we were soon on our way back to Manila, steaming over a quiet sea; and it was delightful to us on deck. This time, I was very glad to get away from Hong-Kong. In the first place, my regular duties kept me on the move as much as I liked in that climate; and I knew so many people in Hong-Kong, and these people had such excellent stomachs, and could drink so much whisky, that I had a hard time. People were continually coming on

board that I knew; and the fashion in Hong-Kong is to ask each one to have a drink. When I went ashore, the conditions were the same, except that I was guest instead of host. The consequence was that the task of doing my official duties and keeping absolutely sober, combined with doing my social duties and drinking with everybody, was extremely trying and not a little dangerous.

From Manila, we went to Sulu, which the Spaniards called Jolo. The scene here was bright and cheerful. Trim white houses lay at the foot of the bay, and a substantial pier, supporting a substantial lighthouse, ran out from the town into the bay. A large village was to the left of the town as we looked at it; and this village was built on piles, so that the houses of the village were about six feet above the water. We knew that this must be a Moro village.

The Moros are the inhabitants of the Sulu islands, and are quite different from the Tagals of the Philippines, though both are in part Malay; and although the Sulu Islands are included among the Philippine Islands, they are really quite distinct. The Moros never yielded entirely to the Spaniards, and always gave them trouble. They were governed directly by the sultan, who lived in his capital not far from Jolo, and was always recognized by Spain as sultan, though he paid tribute unto Spain. In the early days these Moros, like the Moors of Morocco, were pirates, and it took the united action of the powers to stop their piracy.

In Jolo Bay, were many boats with large sails, and these sails, instead of being of one color, as sails in most other places are, were of many colors; and the whole produced a very attractive and gay effect. The bay, and town, and mountains, were beautiful, and the temperature was delightful. The Sulu Islands and all the islands in their vicinity are much cooler than the islands farther north, for some reason that I do not know; and a breeze almost always blows among them.

Some of us went ashore in the evening, and strolled

through the town, and we were amazed when, after a very short walk, we came to a full stop against a stone wall at the other end of the town. The town had the well-built houses, the carefully paved streets, the fountains, and the shops of a big city; but it was the tiniest town I ever saw. It was as if some one had taken a section out of a handsome Spanish city and put a wall around it.

Our stay at Sulu (Jolo) was very short, and we got under way at early daylight on Tuesday morning, and steamed to the west, toward the town of Balabac, on the Island of Balabac, three hundred and fifty miles away. Our trip was delightful, steaming swiftly over the most beautiful sea in the world, a summer sea, the Sulu Sea, where there is always a breeze, but never a gale.

The next afternoon about one o'clock we sighted landmarks that indicated the entrance to Balabac, and soon we saw the lighthouse. Sometime later we could see the town, its white houses and red roofs backed by the usual luxuriant green vegetation and high hills. When about half an hour's distance from the town we went to general quarters, and got the guns and ammunition ready, for we did not know what we should find. We knew that there had been a large Spanish garrison there and a fort, and also that Balabac had been a naval rendezvous, and many vessels used to anchor in its bay.

We steamed into the harbor, and got pretty close to the town and forts; but we did not anchor, for things looked strange. We were accustomed to have boats come out and meet us, but no boats came. We were accustomed to see people on the beach looking at us, but we saw none. If the Spaniards or the Filipino insurgents, or whoever might be there, intended either to resist or to welcome us, they were making no apparent sign. The situation was astonishing, and it was very perplexing. The only thing that seemed clear was that whoever was ashore did not care to see us very much. But what were we to do? Several suggestions were made and rejected. Some one proposed that we fire a shot at the fort to draw

its fire; but Captain Sperry would not do this, because its flag was not displayed.

Recognizing my opportunity, I asked the captain to let me get a company of volunteers, then land, and make a reconnoissance. He gave permission, and called for volunteers. Of course there was no trouble in getting them. In fact, I had already picked fifty good men; for before getting near Balabac I had agreed with myself that, if anything unusual turned up, I would try to get permission to take an armed landing party ashore, and also that I would invite Ensign Standley and fifty men to go with me. Standley had distinguished himself at Baler, in Luzon, by going ashore at night with Gilmore, climbing a high tree close to a Filipino insurgent camp, and making a sketch of the country at early daylight:—one of the bravest and most officer-like things I had ever heard of.

Standley was delighted, of course, at the idea of going; and so about fifteen minutes after entering the harbor we started ashore with two cutters full of men, well armed. I directed the cutters toward a point on the beach that was clear, and was not on a line with the fort, so that I should be able to land; and, if the fort opened fire on us, the *Yorktown* could fire at it without hitting us. In the bow of each boat was a squad of eight men, and when the boats grated on the sand of the beach, these two squads, with Standley in charge of one squad, and me in charge of the other, jumped overboard, and ran forward, in directions previously decided on, as squads of skirmishers. The rest of the little force jumped overboard after us, and formed in line on the beach in charge of a petty officer, whom I told to go to the assistance of either squad if he heard a shot.

I found nothing important in my direction, and I soon returned to the main body just about the time that Standley did. He also had found nothing except the main road of the town, which was not very far away. Detaching a few men as scouts, I advanced to the main road, and then marched down it toward the town and

the fort, my men formed in column of sections. The road was good, and soon led us into a town of some size, in which were houses of a very good sort. Many of them were large and built with an eye to pleasing effect.

But we saw no living thing. We marched through the town with bayonets fixed, and then up to the fort. We found the fort absolutely deserted. Feeling sure now that the town must be deserted also, I divided my company into small squads, and we examined every place. I never saw drearier sights. I went myself through many of the houses, and there saw evidences of pleasant homes, of children and domestic life. There were gardens about some of the houses, but they now were overgrown with weeds, and coarse grass was growing in the streets. We could not find a single living creature; no man, woman or child, no dog, cat, bird, or chicken. At last I saw a toad hopping in the grass. Not long after, on going through the weed-grown cemetery, I saw a green lizard crawling on a tombstone. The toad and the lizard were the only living things there were in all this village, which recently had been a little world, as every village is. And the silence of the place, and the forsakenness of it, and the slimy, thin deposit on the stones, and the oozy, wet deadness of everything, made a mental impression that none of us will ever forget.

I remember, too, we saw, and smelt, a well. Some-time after we found that, when the war broke out with the United States, the Spaniards withdrew most of the garrison, and the natives of the region attacked the remainder, when they were at church, and killed them, throwing some of the bodies down this well. After that every Filipino that lived in the town abandoned it.

I went back to the *Yorktown* with a feeling different from any feeling I had ever had before.

Then the *Yorktown* turned her nose happily to sea, and we went out about sunset; and soon we could only dimly see the fort and the lighthouse, and the red roofs of the dwellings of the deserted village.

The *Yorktown* headed for Cape Melville, at the extreme southern end of the Island of Balabac. We went there to investigate the condition of affairs at the lighthouse. Cape Melville is at the northern side of the passage between the islands of Balabac and Borneo, the highway between the China and the Sulu Seas, and it was important that its lighthouse should be kept going, because the United States wished to do all things to encourage trade. We knew that the lighthouse had been taken in charge by Americans, and that there had been a serious fight there between an American force of men-of-warriors and the Moros of the island; but we did not know how the fight had resulted. We had food, ammunition, and money for the Americans in case they were still there. We anchored near the cape about eleven o'clock the following morning, just off the entrance to a little bay through which one had to go in order to reach the landing-place, whence a path led through a forest to the lighthouse. We did not see the sign of any living thing except a score or so of monkeys of tremendous size playing on the beach not far away.

I asked the captain to let me take an armed force, land, and march up to the lighthouse, and he consented. Just then the quartermaster reported a canoe coming along the little bay, apparently headed toward the ship. The canoe approached closer, came through the line of breakers across the bay, and then began to toss violently in the heavier sea. Finally it came alongside of the *Yorktown*, and we were astonished to see that one of its occupants was Bisset, a lieutenant in the navy.

Bisset came on board, and said that he had taken charge of the lighthouse and had a number of men with him from the *Manila*, and was very glad indeed to see us, because his men were getting short of food. He said that the natives appeared to be cowed since their fight at the lighthouse about a month before, when the Americans had killed some of their friends.

About half past one I started off with three boatloads

of men and provisions, and, guided by Lieutenant Bisset, pulled through the gap in the breakers, and in half an hour got the boats alongside of a rough sort of pier built out from the beach. We had divided our luggage into as small boxes as possible, and these we carried on capstan-bars, each capstan-bar resting on the shoulders of two men. It was not easy to get all the provisions ashore without wetting them; but we finally succeeded, and then began our curious march.

I had thirty armed men, and thirty unarmed men who carried the luggage. Bisset had said that the Moros were not hostile now; but Captain Sperry thought it well to be prepared for trouble, because the temptation to get possession of our provisions and ammunition by the simple process of killing the men carrying them through the long, winding path in the jungle might be too strong for some enterprising Moro warriors to resist. I put one third of the armed force ahead, one third in the middle, and one third behind. It was impossible to put any on the flanks, because the path was too narrow and the vegetation on each side too dense.

The distance in a straight line from the landing to the lighthouse was only about a mile, but it was a gradual ascent, and the path was winding, and some of the burdens heavy; so it was an hour before we reached the rocky plateau on which the lighthouse stands. The path lay through a virgin forest more dense and rich and beautiful than any I had ever seen or dreamed about, and filled with lofty trees, and through the openings among the trees we saw small spaces of blue sky, and an occasional bird of plumage we did not know, but beautiful and bright, and sometimes we heard the sound of them singing in the branches. Sometimes a quick sound to the right or the left brought our attention to the alert, but in the dense undergrowth we saw nothing. Sometimes we thought we heard a rattlesnake, and probably we did; but we saw none.

Suddenly we emerged from the forest, and then we

found ourselves on a bare and rocky plateau. There, sharply outlined against the sky, towered the lighthouse of Cape Melville.

We found the lighthouse was surrounded by a high wall, made of iron in some parts and of stone in others, which inclosed an area of possibly an acre. There were several houses in the inclosure, some of which were occupied at present by our men from the *Manila*, and some by the lighthouse keeper, a half Moro, and his family.

I ascended the winding iron staircase inside the lighthouse (it was a lighthouse of the first order), and then went out on the platform at the top that encircled the enormous lantern. My admiration was aroused by the beauty of the lantern and the perfection of its scientific design and mechanical detail; but as soon as I turned my back to it and looked outward, I forgot such trivial things; for I was almost appalled by the grandeur of the view. Far to the north ran the magnificent slopes of Balabac, covered with countless trees; while to the west and the south and the east there was nothing but the blue ocean, which looked as smooth as the sky above. The sky and the ocean merged into each other so perfectly that I could hardly discern the horizon-line. Up in that lighthouse, on that high plateau, almost in the sky, I felt very much alone; with nothing but the sky and the clouds and the sea for my companions.

We found all the men from the *Manila* in good health, and in about one hour we began to retrace our steps. On reëntering the forest, we looked back, and there saw the magnificent lighthouse guarding the passage between the China and the Sulu seas.

Our walk back was in a lighter mood than our walk to the lighthouse, and we soon took our boats and went back to the *Yorktown*.

From Cape Melville we went back to Zamboango, and thence to Sulu. We started from Sulu on the morning of September 9, and convoyed the *Buchuan* to Siassi. Siassi had had a Spanish fort, and now the American

army was about to establish an American fort, or post, there. The *Buchuan* landed her troops, and perhaps an hour later we saw the American flag rise quickly to the top of the flagstaff. The *Yorktown* fired twenty-one guns in salute, and then steamed back to Sulu.

At early daylight in the morning of September 21, the *Yorktown* got under way with four army officers on board, rounded the western side of Sulu Island, steamed then to the eastward, and about ten o'clock anchored off the town of Maiambun. The *Yorktown* could not get closer to the shore than about a mile; so the army and navy officers went ashore in boats.

We found that we could not get the boats very near the beach, so some of us were carried ashore by sailors, some were carried by Moros, and some went in canoes. Some of the army officers took off their shoes and socks, rolled up their trousers, and waded ashore; and I remember remarking to the captain what beautiful legs Colonel Goodale had.

The town of Maiambun, like most of the Moro towns, is built on stilts; so that the first floors are about six feet above the ground. The houses were gaily decked with brilliant flags and banners, and the men and women were dressed in bright attire. There were several thousand people in sight, the men all armed with barongs and krises, which are weapons about half-way between a meat ax and a sword. We were ceremoniously received, and quickly surrounded by a body of horsemen; and I must admit that this gave me a little alarm. Here we were, ten unarmed men, on shore in a Moro village, and the *Yorktown* a mile at sea! Most of the horsemen were armed with rifles, but some had spears. The procession soon started, and we walked in column about a mile with our escorts, and finally reached the neighborhood of the royal palaces.

We were first taken to the temporary palace of the sultana. We found it a large wooden building, the first floor raised about ten feet above the ground. We walked up

a wooden stairway, and found ourselves in a very large room filled with armed soldiers and with women. I did not like the look of things at all. I was not afraid that the sultana intended us any harm, but I knew that the Moros are in part of Malay blood, and that they believe that if one of them should kill a Christian, he would be sent at once to paradise.

We were ushered into the presence of the sultana, and we saw her, clad in green, coiled like a snake on a table; and, through the interpreter, she bade us welcome, and said she loved the Americans, and she knew the Americans loved her, and she knew it because they came so far to see her. She said that she loved the Americans as much as they loved her, and that she was just about to go to see them when she heard they were coming to see her. Colonel Goodale replied that the American people had heard of her wisdom and goodness, and had sent us to pay her a visit of friendship and to make her a little present, which he hoped she would accept. And the sultana, coiled on her table, kept her clear, alert eyes fixed upon him. Then she replied that the American people were very noble, and that she was sorry that she had so poor a home to receive them in, but she hoped that they would not judge her great love by the smallness of her house. Then Colonel Goodale handed her a bag of five hundred dollars, and she smiled, chewed her betel-nut, and let the red juice trickle down, and one of her servants held the beautiful coral bowl into which the sultana spat. And the musicians struck the tom-toms and beat the bells. Then the colonel and some of the rest of us said flattering things, and she replied glibly to all. Then we went out at last into the sunshine, safe thus far.

The sultana was not, perhaps, so commonplace a woman as some others. We were told that she had become the wife of the previous sultan after having killed two husbands; that she was not his first wife, but that the present sultan was her son; that she had put him in succession to the throne by the simple process of poisoning his elder

brother and sister, who were not her children, and their mother; and that she had then poisoned her husband, which made her son the Sultan.

We were now escorted to the palace of the sultan. We first came to a high stone wall, in which was a large iron gate with two cannon on each side; and as we passed through, we were saluted by a company of soldiers, well uniformed and armed. The way to the sultan's presence was lined with pages, all in European dress. We found the sultan in a large, square, plain room, and after being presented, we went to an adjoining room, where there was a long table covered with a sort of curious-looking lunch. There were just enough chairs for us ten officers, the sultan, the interpreter, and two other Moros of high rank. At the sultan's right was a page, on his knees, holding a bowl into which the sultan spat the juice of the betelnut. The conversation between the American officers and the sultan was stormy; there was a difference of opinion as to how much revenue the sultan should get from Siassi. The sultan was just as brutal and coarse in his manner and talk as his mother was soft and wheedling. We soon noticed that there was a Moro stationed exactly behind the chair of each American officer. I do not know of my own sight whether there was one behind mine, because I did not like to look; but I saw there was one behind every other officer. Each Moro had a barong in his belt, and we knew that the practice of a lifetime makes the Moros very quick with the barong; so much so, that no Moro ever dares to put a hand on his barong unless he intends to use it. In the same way, it is said, in some parts of the West, in our own country, no man ever dares to put his hand near his right hip-pocket, where his revolver is supposed to be, unless he intends to use it.

Our interview lasted two hours; but at last we all got away, and back to the *Yorktown*, and I knew one who felt very much better when he got away. And I know one who will always carry in his mind a vivid memory of gaudy, mounted soldiers with spears, and unmounted

soldiers with barongs, and a dense vegetation, and a she-devil of a sultana, in green, coiled on a table, spitting the red juice of the betel-nut.

The *Yorktown* went back to Jolo, and we found that during our absence an incident had occurred that shows how a Malay, when once his anger is aroused, loses all self-control, and becomes a maniac. A party of about a dozen Moros of another tribe came to Jolo and did some fishing in the bay. The Jolo tribe protested, and the visiting tribe stopped fishing at once and went ashore. Up to this time, and for some hours after, all their intercourse was friendly; but later in the day something occurred that aroused anger. Then the Jolo tribe fell upon the others and killed them, and literally chopped every body to pieces; they chopped each body into small bits.

The *Yorktown* then started to Sandakan, a town on the northeast coast of Borneo. Sandakan looked very attractive as we steamed past the high bluffs into Sandakan Bay, and we soon anchored in front of it, and found ourselves in a beautiful harbor surrounded by high green hills. The houses were white, with red roofs, and an English church showed its spire and cross above the trees.

We found Sandakan a very interesting place. There was a fine museum, with many splendid specimens of rare animals and birds. There was also an excellent club, where the officers could go and play billiards. The sailors could go ashore, walk about the magnificent hills, and become acquainted with the people; and those who wished to get drunk and fight could do so.

The next evening (Sunday) the governor gave us a dinner party at the government house. I think five of us went. The government house was reached by a walk of perhaps five minutes from the landing, and the latter part of the walk was along a winding road of gradual ascent, among fine trees. We soon found ourselves in front of a large white mansion, and when we neared it, we heard four sonorous notes of singular power and

sweetness. Getting nearer, we saw there was a magnificent Japanese bell at the foot of the stairway leading to the entrance, and a sentry standing by it. We afterward learned that it was part of his duty to note the number of guests arriving, and strike that number on the bell.

We went up the stairway, and soon found ourselves in a very large room, open on nearly every side, where a considerable company was gathered. Most of the men were in civilian evening dress, but some were in a simple uniform. The ladies were dressed in white, with low neck and short sleeves; and their graceful draperies were in delightful harmony with the soft light and the pleasant calmness of the night.

A large company sat down at dinner. The dishes were delicious, each wine was at the correct temperature, and the servants were such as only people who have lived in Asia know anything about. After dinner we had music and pleasant talk. It was delightful to be in civilization once again, and it came with no little surprise to us to find in Borneo as interesting and cultivated people as we had ever met. We had always associated Borneo in our minds with "the wild man of Borneo."

We went from Sandakan back to the lighthouse at Cape Melville, and from there to Labuan, because Captain Sperry wished to telegraph to the admiral at Manila for instructions.

The next evening the governor gave a dinner party at the residency. We found him a very interesting man. He had some large scars on his face, and we were told that a few years before, while at the race-track at Singapore, he heard the cry, "Amuck! Amuck!" Instead of thinking of himself, as most other people did, he tried to save some women and children; and he had just succeeded when the Malay, running amuck, rushed at him, and cut both sides of his face open.

On Saturday evening, as I have said, the governor gave us a dinner party. On Sunday the ladies of the place came on board and took tea with us in the afternoon.

In the evening the captain of the *Yorktown* gave a dinner party to the governor's wife, to which I had the good fortune to be invited. On Monday Mrs. Buckland gave a lawn party at the golf-links, and I had the good luck to be asked by Mr. and Mrs. Hardie to go home and take dinner with them afterward. Mr. Hardie was a Scotchman, and his wife a beautiful Australian. We had a most pleasant dinner.

A venerable gentleman with a long white beard, a Scotchman and intimate friend of Mr. Hardie's, was of the party. While we were waiting for dinner, he said:

"Lieutenant, won't you have a peek?"

"Thank you very much," I said, not knowing what a peek was.

He mixed a drink that proved to be much like gin and bitters, with other things in it, and we drank it, and I liked it very much. After a short talk he said:

"Lieutenant, won't you have a peek?"

"Thank you very much," I said.

The old gentleman drank his second peek with evident relish, but I was afraid to do more than taste mine. Soon he said again:

"Lieutenant, won't you have a peek?"

I answered hesitatingly that I had had two peeks already.

"That 's so," he replied. "We 'd better have brandy and soda."

Before I could decline, he called a servant and ordered two brandies and sodas. The servant was well trained, and in a very few minutes he brought in two big tumblers, filled with a cold, bubbling liquid that was delicious, though a little strong.

The white-bearded patriarch drank his pint in the way in which other people drink soda-water. I was afraid to drink mine; but I was also afraid to violate the sacred laws of hospitality, and so I compromised with the devil, and drank a little. At dinner the old gentleman drank two tumblers of Scotch and soda, besides white wine and

red wine and plenty of port. When the rest of us took black coffee, he took a large cup of tea, into which the hostess poured Scotch whisky instead of hot water; and when we had cigars and liqueurs, he showed a liking for all, but a partiality to cognac. I looked forward with extreme anxiety to the time when he would have to rise from the table, and walk into the drawing-room. But he got up when the rest of us did, and walked with absolute steadiness; and his speech, gait, and gestures were precisely as they were before he took his first peek.

The Labuan idea about the amount of whisky, gin, bitters, port wine, and liqueurs that I could drink was so far distant from the truth, and yet so firmly fixed in my good hosts' minds, that I had to carry on friendly defensive warfare. I was able, however, at half past nine to leave the house in pretty good condition and walk down to a boat, escorted by their Malay water-carrier. The boat was a canoe, and I held on very tightly and balanced myself very carefully as I was paddled to the *Yorktown* in the darkness.

The next day Mr. Hughes was "at home," and we Americans played croquet, with English mallets, very badly. Then the English consul, Mr. Keyser, took us up to his enormous house, and we stayed until dinner at eight o'clock. I took in to dinner a young married woman, a bride fresh from school in England. After dinner, at half past ten, we were taken to the governor's, and there we had a hop which lasted until half past two. It was very warm, but we danced, nevertheless. I danced every dance, and ladies being somewhat scarce, I danced a waltz and two-step with the bridegroom, Mr. Llewellyn, a handsome young Welshman. The next day was comparatively quiet, but the day after a large dinner party was given by the Hardies, which was very fine. There were fifteen at table, and ten servants, all of them Malays or Chinese, who were directed by a "number one boy," who did not wait on the people himself, but directed the others. And when I thought of the frail wooden house,

resting on stilts above the ground, as all the houses in that country do, and then of the elaborate dinner, I said to myself that the dinner must have cost more than the house did.

Next day Mrs. West gave a tea party at the golf-links, and that night Mr. Keyser gave a lawn party to our sailors, where they played billiards and croquet, drank beer, sang songs, and gave cheers till they were hoarse. Friday the *Yorktown* gave a hop and reception, and fair women and brave men came on board, drank our punch, and danced. The native Labuan band was on board, and about eight o'clock they played the "Star-Spangled Banner," "God Save the Queen," "John Brown's Body," etc., ending with the inevitable "He's a Jolly Good Fellow."

We found Mr. Keyser a most interesting man. He was a bachelor, and lived in a fine house full of books and servants. All his servants were Malays, and included several families whom he had brought with him from his previous station. Mr. Keyser had a great affection for the Malays, and said he always wished to live among them, because they are kinder and more faithful than any other people. He said, however, that it is necessary to understand the Malay, because if a Malay's anger is once roused by a sense of injustice or by jealousy, the ordinarily indolent, impassive man becomes a maniac, and runs amuck, and kills every one he can, friend, mother, and foe, with a fury that knows no limit and no discrimination. I could not help thinking how closely this bore on the whole Philippine question, for the Filipino is in part Malay.

Saturday the Allards gave a dinner party, and on Sunday preparations were made to receive his royal highness, the Rajah of Saráwak, sometimes called the "Rajah of Borneo." We were curious to see him, because he occupied a most extraordinary position. Years ago he was a lieutenant in the Royal Navy, when his uncle, the great rajah, died, and left him this kingdom by the sea.

We salute the rajah with the royal salute of twenty-one guns, but the English salute him with only seventeen guns, because in some way his domains are under the protection of the British Government. His Highness did not appear, however, until the next day, and I lost my chance of meeting him; for though Consul Keyser gave him a dinner, I was on duty. Some others met him on shore at the dinner, and they said he looked a little like Admiral Dewey, and was a very alert and charming man over seventy years of age.

At seven o'clock the following morning the governor and his family came on board, and we sailed for the island of Kagayan Sulu, where we arrived in a few hours. That afternoon a party went ashore and erected a flagstaff. The next forenoon I took ashore a section of men, and we formed about the flagstaff. Soon all was made ready by signal between the *Yorktown* and the shore. Then a large American flag was hoisted to the mast, my little party presented arms, the *Yorktown* fired a salute of twenty-one guns, and Kagayan Sulu belonged to the United States.

The *Yorktown* went to Jolo for a couple of days, then to Zamboango, then to Port Mazinluk, a miserable place about twenty miles from Zamboango, where there was nothing to see but flat water and land, and some villages far away. Datto Mandy, the chief of the principal tribe in the vicinity, was friendly to the United States, but there was a large force of Moros opposed to him, and we went there to give him support. We stayed at this wretched place for two weeks with nothing to do or think. Our principal interest was in watching the growth and unfolding of Thomas Allen. "Tommy" was the son of an Englishman and a Moro woman of Borneo. He was twelve years old, and he had been taken by Captain Sperry on board as interpreter, because he could speak Moro, Spanish, and English. He was as bright as a wedding-ring, and had been assistant organist in the little Episcopal church, and his kinds of tricks were not the

kinds that men-of-war's-men were accustomed to. Then he had an interesting appetite. He had a little table by himself in the wardroom, where he ate his regular meals three times a day. Then we could see him sitting with the Chinamen and eating their rice and chicken; and besides that, he made friends with a lot of men in the ship, and would go to their tables and eat with them.

General Bates, with his staff and a party of naval men, went ashore one evening at Bongao and were entertained with a spear-dance by the natives. The Moro warriors danced dances that seemed to indicate the rousing of warlike passion, beginning slowly and working up gradually into what seemed a fierce exaltation; meanwhile, the women beat excitedly on bronze bells of different kinds, and the fire flames lighted up their features.

General Bates wished to communicate with the Sultan of Palawan, and so we went to his capital, Marangas. The whole neighborhood was uncharted, and we were quite sure that we should get aground. We finally got aground. Then we sent out the anchor that we always kept over the stern, backed the engines, and hauled on the wire hawser until we got off in about an hour.

The Sultan of Palawan came on board the next afternoon with a large retinue of picturesque warriors to make his obeisance to the United States. I do not remember much about it except that he put his hand in General Bates's, and General Bates led him about the ship. General Bates attracted and kept the confidence of everybody by the evident sincerity of his character. Some people could not understand how a general could be so modest.

The *Yorktown* went to Zamboango about the fifteenth of December, and on the thirty-first, in the evening, the *Iris* came in. A boat from the *Iris* came alongside while I was sitting on the poop. I saw an officer in white uniform coming over the side, and I recognized him as my classmate Bowyer. He said, "How are you, Jim? I'm your relief."

I went to bed that night about twelve o'clock and I said

to myself, "Your cruise is over, and your work is done." As I lay in my bunk I recalled the trip of the little *Petrel* across the great Pacific; then meeting my wife and little daughter in Yokohama; then the cruise of the *Petrel* in Korea and northern China, while they went through Korea to Seoul, and through China to Peking, and the Great Wall. Then I recalled the *Petrel's* visit to Shanghai, Ningpo, Fu-chau, Amoy, Swatow and Hong-Kong, and the social doings there; then the war preparations in Hong-Kong, and the many interesting things that happened in the Spanish and the Filipino wars. I reminded myself that the captain of the *Petrel* had reported me for "eminent and conspicuous conduct in battle," and that Dewey had included my name in a short list of men mentioned by him for "heroic conduct."

As I went off to sleep, I said to myself, "It 's all over now, old fellow; your work is done, and you 're going home." Just then I heard the orderly say, "Mr. Fiske, the captain wants to see you." I got up and dressed, and went into the cabin. The captain said, "I 've heard that a steamer is aground in Caldera Bay; please make preparations at once for getting under way and going to her assistance."

I left the *Yorktown* on the second of January, 1900, with orders to go home by the U. S. Transport *Solace*. But on getting to Manila on the tenth, I got permission from Admiral Watson to go home by mail-steamer at my own expense.

An extremely disagreeable trip in the *Iris* got me to Hong-Kong, and then I took off my uniform and folded it away and put on civilian dress, with a sigh, and yet with a heart so light that I never expected it to be so light again.

I left Hong-Kong in the *Coptic* on the nineteenth, and went to Nagasaki, and thence through the beautiful inland sea to Kobe and Yokohama, revisiting the scenes of many unforgotten experiences and adventures.

My trip across the Pacific, where I had all the pleas-

ures of seagoing, and none of the responsibilities, was pure happiness; and I knew that I was going home to family and friends and to the rest that I had earned. I occupied myself principally in talking with the delightful company on board, and I remember one evening we had a little dance, when the sea was smooth, and the moon was shining softly.

Two days in San Francisco, and then I found myself in real civilization on an east-bound express. Five days afterward I reached New York, and joined my family, then living at the Plaza. That afternoon we drove to Columbia University, where Mr. Low was giving a reception in the Low Library, just presented by him to the university. There I met many friends of many years, and they said kind things to me.

And I sat by my wife under that beautiful dome, and watched the fashion and wealth and culture of the most delightful city in the world. And I closed my eyes a moment, and saw the dim outline of Corregidor and the sunrise on Manila Bay and the smoke of the guns of the Spanish fleet.

CHAPTER XXIII

SHORE DUTY, TORPEDOES, SEMAPHORES, TELESCOPE-MOUNTS, AND GUN-SIGHTS

I ARRIVED home on February 22, 1900. Shortly after I received orders to assume the duties of inspector of ordnance at the works of the E. W. Bliss Company, in Brooklyn. The Bliss Company was engaged in making torpedoes and projectiles for the navy.

I assumed my duties at once, and found the work exceedingly interesting and instructive. At that time the torpedo was not highly regarded by the majority of officers in our navy or in any other navy and was kept alive by the exertions of an obstinate minority. The chief allegation against it was, and always had been, that it had never accomplished anything in war; and when one remarked that it was hardly developed yet and was a weapon of the future rather than of the past, the answer came back that it had never accomplished anything in war. The situation was the conflict as old as the world between men with imagination and men without it.

At this time, Mr. Frank M. Leavitt, the chief engineer of the Bliss Company, was developing his invention of the superheater, by means of which he superheated the compressed air in the air-flask, and thus increased the energy stored in it. He hoped to improve greatly the range and speed of automobile torpedoes. His idea was evidently so correct scientifically and so valuable practically that I did all I could with propriety to help it along, and I had the satisfaction before I completed my tour of duty of conducting the first test of the superheated torpedo. The test was passed successfully, and superheated torpedoes are now used the world over.

My duties at the Bliss Company were purely of a rou-

tine character; but I was able to make one suggestion, and to have it adopted, which brought forth fruit in the future. This suggestion I wrote in an official letter to the Bureau of Ordnance; and it was to make a careful effort to adapt the turbine to the automobile torpedo. The suggestion was adopted, and a series of experiments was then carried out under the superintendence of Mr. Leavitt, with the authority of the bureau, by which a turbine torpedo was eventually developed that was a great success. The turbine-driven torpedo gradually displaced the reciprocating-engine torpedo in our navy, and now I believe all the American torpedoes are turbine-driven.

The range required of the first superheated torpedo was only fifteen hundred yards, but I became much impressed during the tests of that torpedo with the possibility of achieving still longer runs, and by means of a more powerful gyroscope of making the torpedo more accurate. I was detached and sent to the United States battle-ship *Massachusetts* as executive officer in February, 1902. Shortly after joining the *Massachusetts*, I wrote a private letter to the Bliss Company, asking if it would not be possible to make a torpedo which would run for ten thousand yards or even twenty thousand yards. I received a polite, but non-committal, answer, and I have been told since that my letter caused certain officials of the company to suggest that I was becoming mentally deranged. As is well known, torpedoes now have a range of thirteen thousand yards, and are achieving longer and longer ranges with each succeeding year; so that a range of twenty thousand yards is already in sight.

Before I had left New York to join the *Petrel*, the idea had occurred to me of making a whistle, which could be operated by the officer of the deck, and give warning to men in distant compartments of the ship when the watertight doors were to be closed, so as to obviate the chance of men being locked in those compartments in case a

threatened collision necessitated closing those doors. A few preliminary experiments that I made on board the *Brooklyn*, then building at Philadelphia, showed the practicability of the scheme. The Western Electric Company took it up seriously at once; so that I found on my return to New York that all of the new ships were being equipped with my "solenoid warning whistle." The solenoid was the electric means that operated it. This device was put into all the ships for several years; but it was gradually replaced by a device that was similar, except that the sound made was more like that of an automobile-horn.

Not long after I had left New York to join the *Petrel*, my semaphore system had been established on one mast of the U. S. S. *New York*, flag-ship of the North Atlantic Fleet, while a signal system invented by Admiral Bruce was installed on the other mast. The two systems were tried in competition, and mine was declared to be the better. For a long while my system worked well; but finally some water got into one of the electric solenoids that moved the semaphore-arms, and the apparatus refused to work. A board of officers declared in favor of the system, but recommended that the semaphore-arms be made to work by hand power rather than by electric. Then Midshipman Mustin invented an ingenious and effective apparatus for hand power, which was installed and worked very well. This was the situation when I reached home. So I proceeded to devise a hand-worked apparatus which should be a little more satisfactory than that of Mustin, which was a little crude, having been made largely on board ship and with insufficient appliances. Then I persuaded my good friend Mr. Thayer to attack the problem anew, and to rig up a semaphore apparatus on a large flagpole on the roof of the Western Electric Building on West Street. I had the assistance of one of the best mechanics I have ever seen, a Mr. George Atwood, who finally became more enthusiastic about the semaphore system than I was.

When the apparatus was ready, the Western Electric Company asked the Navy Department to appoint a board to try it. A board was appointed at once, and it made a careful series of tests of the system as installed on the roof, testing it, in comparison with signal-flags, both for rapidity of operation and for the distances and directions over which it could be read. The trial lasted three days, part of the board being on the roof of the building, and the rest on the navy-yard tug, which went to various positions up and down the river where good observations could be made. The report of the board was wholly favorable to the semaphore system, and substantiated my claims that the system could make readable signals more rapidly than flags could, and also that they could be read equally well in all directions; whereas the flag system could be read well in only a few directions. The board, in conclusion, recommended extended trials at sea on board two battle-ships of the fleet; so that those two ships could signal to each other. In accordance with this recommendation, the system was installed in the *Kearsarge* and *Alabama*. It was operated by hand power.

During my wife's stay in China and Japan she had bought many beautiful tapestries, cabinets, rugs, pieces of china, silk, and silver, but she had not bought any until she had had the experience of a year's life in China and Japan, and felt competent to decide what was good and what was mediocre. Most of her purchases were made in the early part of 1898, and shipped to New York in a sailing-ship from Hong-Kong. After her return to Hong-Kong from Manila in February, 1899, she went to India, Egypt, and Germany, where our daughter took a course in the violin. She reached New York shortly before I did, and purchased a house just nearing completion at 309 West 106th Street. The goods from China and Japan had already arrived, and as she had bought some things in India and Egypt, she had a good deal with which to equip a house. Certain purchases in New York

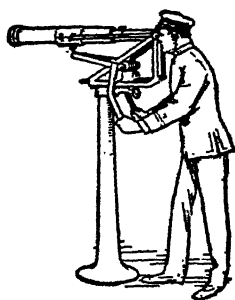
were added to those made abroad, so that by the first of May we were able to move into a beautiful home.

Naturally, we started in to entertain our friends, and the first thing that happened to us in this beautiful house, to which we had looked forward so long, was that we both became sick. The doctor said we had been giving too many dinner parties, and that we should have to moderate our pace.

We gave a housewarming shortly after moving in, and many guests did us the honor to help warm the house. We had a large punch-bowl on the table in the dining-room, and in this punch-bowl we put some punch which we had made on the receipt of our old friend, Medical Director Bloodgood of the navy. Some of the guests became just a little hilarious, and declared that the punch, while good, was exceedingly strong; but we said no, that it was a regular punch and not especially strong. After the guests had departed, I chanced to go into the butler's pantry, and there I saw forty-eight unopened bottles of soda-water that the servants had forgotten to put into the punch.

One afternoon, some years before, during the tests of my position-finder at Fort Hamilton, I had looked through the big telescope of the Lewis Position-Finder at a merchant ship coming up the bay, and it occurred to me that it would be fine to have large telescopes on board our ships with which to read signals, watch the operations of an enemy, etc. However, I realized that there would have to be some inventing done to make such a thing quite possible. The idea did not fade entirely from my mind, however, and so one day while I was in the *Petrel* I conceived the idea of pivoting the telescope near the eye, instead of in the middle, and of supporting the telescope by a counterweight. I made a drawing and description of this apparatus and submitted it to the Navy Department, but never received any reply. I made up my mind, however, that as soon as I got home I would construct an apparatus according to my idea.

At different times during the cruise I made experiments with crude apparatus, which showed me that the plan was sound and capable of development. So when I got home, I had an apparatus made. I found that the



Naval Telescope and Mount.

counterweights caused considerable friction and inertia, and so I replaced them with a spiral spring. I met some unexpected difficulties, but was finally able to produce a very practical and convenient apparatus.

I submitted this to the Navy Department, and received permission to put it on board the battle-ship *Massachusetts*, then at the New York Navy-Yard. The captain liked the machine as soon as he saw it, and got the navy-yard authorities to build a platform for it above the bridge. The Navy Department directed that it be given a six months' test. I was ordered to the ship myself as executive officer shortly after, and when I joined the ship, which was with the fleet at Cienfuegos, Cuba, I found that it was in continual use and very much liked. The next time we were at the navy-yard, the prescribed test of six months having been completed, the captain sent in a very favorable report. By return mail the captain received an order to have it removed from the ship, and I received a copy of the order. I then asked the captain to let me take it out of the ship, and put it on the wharf, so as to obey the order; but to let me take it back again on board the ship as my personal property and put it in place again. He assented, and the instrument remained in the ship till she went out of commission, being borrowed occasionally by some captain or the admiral for some specific purpose. Then it was put ashore in the navy-yard store-house. Later, when Lieut. W. S. Sims (later Admiral Sims), then director of target practice, was developing his target-practice system, he bor-

rowed it for spotting, and kept it for some time, and then returned it to the storehouse.

In 1905 Admiral Barker, then commander-in-chief of the North Atlantic Fleet, wrote me a letter, asking where he could get a telescope and mount like mine; and I told him I would be very glad to loan him mine, which was the only one in existence. Admiral Barker answered that he did not think that would be right; that he thought the Navy Department ought to buy it, and he asked me how much I would charge for it. I wrote back that I would sell the instrument for five hundred dollars, though it had cost me a little more than fifteen hundred. Then Barker had the instrument bought, and put into his flag-ship.

In the early part of 1907 the Naval Observatory told me unofficially that the navy officers there wanted to have the instrument introduced into the navy, and said they thought the best way was to have a competition instituted among instrument-makers, and asked me if I would submit my instrument. I told them that I was already out of pocket more than a thousand dollars, but that perhaps the Western Electric Company would. I then wrote to the company, suggesting that they do this under a license from me, and they consented. They made a beautiful instrument, substantially like the one in the *Massachusetts*, and when the competition was held, it was the winner, with no competitor in the same class. Then the Navy Department advertised for bids, specifying my instrument exactly. Several firms bid, all underbidding the Western Electric Company, which they could easily do, as they had no previous expenses to make up and no royalty to pay. The Navy Department accepted the lowest bid, made by a New York firm.

So far as I was concerned, therefore, the net result of the operation was that I lost a little more than a thousand, and that the large ships of the navy were supplied with an invention which I had made and developed and

for which I had obtained a broad patent. I intended for a long time to sue the infringer; but I figured out that the cost of the patent suit and of traveling expenses back and forth, and the amount of time required would probably be so great as not to make it worth while.

The joke is on me. Not only did I lose a thousand dollars and do a lot of work, but I did not even receive any credit, because most of the people in the navy do not even know that I invented what is now considered a very valuable appliance. I understand that all our large ships are now supplied with these instruments, and that similar ones are now used abroad.

My tour of shore duty being completed, I left in the early part of February to join the *Massachusetts* at Cienfuegos. I stopped in Washington on the way down, and called on Commodore O'Neill, chief of the Bureau of Ordnance. O'Neill told me that he had some bad news for me; and when I asked him what it was, he said that he was going to withdraw the telescope-sight from the service. I asked him why, and he replied that the reports of the telescope-sight from the ships were so unsatisfactory, and the opinion of naval officers regarding it was so unfavorable, that although he himself believed in the sight, he had decided to give it up. I told him that the trouble was not with the sight, but with the flimsy way in which it was made, and with the faulty construction of the telescopes supplied by the bureau. I told him that I had known for a long while that this was so, because I had seen the apparatus in the ships; that the bureau had never allowed me to have anything to say about the construction of the sights, and that the very first sight, which I had tried in the *Yorktown*, was better than any made by the bureau in the twelve years that had followed. Naturally, O'Neill did not agree with me, and I left with the discouraging knowledge that a most important invention of mine was on the point of being discarded; and that if it was discarded, it would probably be discarded forever. I found afterward that one of the

officers of the bureau, Lieutenant Strauss, then persuaded O'Neill to let the sight live a little longer.

Shortly after this, Lieutenant W. S. Sims came back from a cruise in China, where Captain Sir Percy Scott, R. N., had made some unprecedented target practice, using some telescope-sights that he had had made himself. Sims came back full of energy and enthusiasm about the telescope-sight, and its possibilities with a proper system of training.

Realizing the inertia of the department, and the straightforward character of President Roosevelt, Sims wrote to him direct, which was a most improper proceeding from the point of view of officialdom. Mr. Roosevelt took up the matter at once and with his accustomed force. Backed by this, Sims was able to bring about an actual revolution in our methods of target practice, and in the matters of the construction of ordnance apparatus as applied to naval gunnery. Among other things, he brought it about that some strongly constructed telescope-sights were made, and that target practice was held with them. These trials demonstrated the truth of what I had told O'Neill, and brought about almost instantly the rehabilitation of the telescope-sight in the minds of naval men.

The action of Sims precipitated a crisis for the telescope-sight, which it passed successfully. After that the telescope-sight was taken up at once all over the world. Too much credit cannot be given to Sims for this, and neither can too much credit be given to President Roosevelt, who took his duties as commander-in-chief of the army and navy more conscientiously than any other President except George Washington.

CHAPTER XXIV

EXECUTIVE OFFICER OF A BATTLE-SHIP

I FOUND the duties of executive officer of a battleship as arduous as they were supposed to be. The executive officer of a large ship is on duty all the time, and is, virtually speaking, the captain of the inside of the ship in all its details of personnel and material. The duties are mainly of routine character, but they extend from midnight of one night till midnight of the next night, and then start in again. As this was the only duty I ever had on which I gained in weight, I fancy the duties did not seem so serious to me as they did to some others, though I found them sufficiently serious. nevertheless. Fortunately, I was able to get through with them without loss of sleep or appetite and without having quarrels, and I often thanked my father for having given me a disposition by heredity which did not let me be downcast for more than a few minutes at a time.

The commander-in-chief was Rear-Admiral Higginson. We were often disposed to growl at the number and character of drills we had and at the sudden changes in routine; yet we realized that it was not altogether his fault, because he was simply carrying out the orders of the Navy Department.

As illustrating these sudden changes, I recall one morning the following summer, when the fleet was anchored near Martha's Vineyard, and the *Dolphin*, with the secretary of the navy on board, anchored near us. It was Saturday morning, the day for scrubbing decks and everything else; but we knew when the *Dolphin* arrived that we should probably have to get under way and go through some tactical drills; so all the ships had steam

up. About nine o'clock, however, we were reassured by a signal from the *Dolphin* that the fleet would not get under way that day. So we got hard to work at the Saturday job of scrubbing decks. About half past nine the captains went on board the *Dolphin*, and at ten minutes of ten the signal went up from the *Dolphin*, "Fleet will get under way at ten o'clock"! In two minutes long lines of naked and half-naked men were hoisting boats and rigging in davits, getting in gangways, and bringing to the chain; and at ten o'clock exactly, when the signal was hauled down, the *Massachusetts* got under way with the other battle-ships of the fleet.

We went from Cienfuegos to Aspinwall, now called Colon, which I found much changed and sobered from the time of my last visit. Colon was a dull place now; in fact, depressing. The warm, moist climate and the prevalence of fevers of different kinds were the cause. I remember seeing two little boys trying to play one afternoon; their intentions were good, but they did not have enough energy to play.

From Colon we went to Culebra, just east of the island of San Domingo and west of St. Thomas, a place having great natural advantages as a naval base. On the way from Cienfuegos to Colon and north again the admiral exercised us a great deal at what were called "fleet tactics," but which were not really fleet tactics at all, but only tactical drills. The ships of the fleets, for instance, being in column, one behind the other, the admiral would make a signal, "Head of column right." When the signal was hauled down, the leading ship would turn to the right and be followed in succession by the others. It may not seem to a layman that there was any particular reason for drilling at such a simple manœuvre as this, or even at some of the other manœuvres, where the column would countermarch or go from column into line abreast or change from one formation to another; but anybody who has taken part in, or even seen, a tactical drill will realize the necessity for a great deal of drill in moving

those enormous masses with the precision required and as close together as they must be in order to concentrate their gun-fire on an enemy. These manœuvres, however, did not constitute fleet tactics any more than similar manœuvres of infantry regiments or companies constitute infantry tactics. Tactics is the handling of large warlike bodies, and carries with it the idea of handling them in such a way as to bring them effectively to bear against an enemy. A tactical drill is merely a drill intended to insure the correct carrying into execution of some plan of tactics. The tactical drills in which the father of Frederick the Great drilled the Prussian Army brought the army to such a condition of skill in tactical manœuvres that it became an all-powerful weapon for carrying out the tactics of Frederick the Great.

While we were at Culebra, however, our tactical drills were displaced by fleet tactics when the *Dolphin* arrived there, carrying the four-starred flag of Admiral Dewey, who came to drill the fleet at fleet tactics, with Rear-Admiral Henry C. Taylor as his chief of staff. Fortunately for the navy, Taylor had been made chief of the Bureau of Navigation, and had already formed what was a very, very mild kind of general staff by securing the establishment of the General Board, with Admiral Dewey at its head, and persuading Admiral Dewey to take personal charge of the fleet tactics of the Atlantic Fleet, first at Culebra and afterward near Narragansett Bay. Taylor had also ordered to the tactical drills the battle-ships in Europe, under the command of Rear-Admiral Crowninshield. After the tactical drills were ended that winter, a strenuous effort was made to let Crowninshield's ships go back to the comfortable European cruising that had formerly been carried on; but Taylor was strong enough to prevent it. This was a more important victory for the navy than many appreciated then, or than some appreciate even now. It committed the navy to the policy of organized effectiveness, and set the official seal of disapproval on the idea of di-

vision of force so firmly that our fleet has ever since been kept together, though it has had several very narrow escapes from being divided on several occasions when political influences have tried to have it divided.

From Culebra the ships of the fleet went to New York for a brief stay at the navy-yard in order to get ready for the summer's drills, which were to be held in the neighborhood of Narragansett Bay. My recollection of the summer that ensued is like the recollection of a merry-go-round. I was never so busy before or since, and I hope I shall never be so busy again. The little episode I just spoke of in the matter of the fleet getting under way when the *Dolphin* arrived was characteristic of every day, and almost of every night, that summer. It was impossible for anybody to make any plans or to sit down and think about anything, because, if he did, he would be left behind by the procession. Everybody was kept running all the time, and everybody was out of breath. My four-arm semaphore on the mainmast of the *Kearsarge* was kept working at frequent intervals during the day, and found to be very valuable for sending messages to the ships both when at anchor and when under way.

One of the factors that made the life so strenuous was that, in addition to the regular drills and exercises of various kinds, the Navy Department had plunged deep into a system of education of the enlisted men. The idea had been conceived that the better educated a man was, the better he would do anything, a principle good, of course, as a general principle, but, like all general principles, dangerous to apply thoughtlessly to special cases. Many of the more conservative officers in the navy, of whom I was one, pointed out that Admiral Luce had gone into the subject of the education of the enlisted men during thirty years, and had finally committed the navy to a system of training so comprehensive and large that the ships and officers and men engaged in training the apprentices had become an unduly large fraction of the whole

navy; and yet that even Admiral Luce had never carried out, or even proposed, going to such an extreme as the navy was going to then. By the plan then being carried out, officers of divisions in each ship would take their men, many of whom could hardly read and write, all over the ship, and try to make them understand the theory and practice of the wireless telegraph, the theory and practice of the steam-engine, the science and the art of naval construction, the fabrication of high-power steel guns, the laws of explosives, the construction of torpedoes, etc.; in fact, make them understand the theory and practice of all the arts represented in the ship. The poor devils could not possibly digest such an enormous amount of mental food, and the system was soon abandoned. Lieutenant Sims, with his clear head and consequent faculty of clear expression, did more than any other one man to break it down, pointing out that what the Government wanted of every man was simply to do well the work which he was engaged to do; just as a base-ball club did of the various players on the nine. Sims then pointed out that there was not a base-ball team in the country that sought to educate its base-ball nine in reading, writing, and arithmetic or in any of the arts and sciences.

We did not know until afterward that a prime reason for Admiral Dewey's being there was that President Roosevelt had sent him to take command of the fleet in case Germany should refuse to do what she ought to do in a certain matter, what President Roosevelt wished her to do, and what she eventually did do.

When we went south in the following autumn we went to Culebra, to prepare for fleet target practice, which was to be held later at Pensacola, and was intended to try out the scheme which Sir Percy Scott had found successful in his ship the *Terrible*, and which Sims had induced the Navy Department to take up, the said "inducing" being what was virtually an order from President Roosevelt. In training for this target practice, small

moving targets were dangled in front of the telescope-sights, and moved up and down and sidewise, by appropriate means, so as to simulate moving targets, and to offer the same problem for hitting them as was offered actually by stationary targets to the gun-pointers on board moving ships. For some reason we called this practice "Morris Tube" practice. I have never been able to ascertain who Morris was, and there was no tube used in the practice.

In 1894, when I was in the *San Francisco* at Bluefields, I proposed a system identical with this to Captain Watson, and received his authority to rig it up for trial on the port after gun on the quarter-deck. I started to make the simple apparatus required, but shortly after that the ship was ordered home, and other interests and duties took up my time.

One morning when we were having stationary target practice at Culebra and I was standing on the fore-and-aft bridge, supervising the target practice, I saw a great cloud of white smoke come out of the starboard after 8-inch turret; then I saw some men fall out of the ports in the rear of the turret, followed by some others who were on fire, one of whom jumped overboard. I sent the ship to fire-quarters immediately, had the burned men taken to the ship's hospital, and despatched a steam launch to pick up the man who had jumped overboard. I realized, of course, that a serious accident had taken place. I tried to get into the turret, as did also Lieutenant Cole; but the smoke was so dense and suffocating that we could not get in. It finally cleared away, however, and Lieutenant Cole went in. He reported to me that there was nobody in the turret.

We got orders from the admiral to go to San Juan, Porto Rico, and land the burned men at the hospital; and we started at once. That afternoon, on the way up, a curious smell of something burning pervaded the deck, and was reported to me by the officer of the deck. I went up on the superstructure-deck, where a large number of

men were now collected. Soon the smell was traced to a large ventilator, the mouth of which was about eight feet above the deck, and which went down to a grating about twenty-five feet below, on the roof of the fire-room, where the furnaces were. I climbed up to the mouth of the ventilator, but could see nothing; but there was a light smoke and a very disagreeable smell coming up. So I tied a rope around my waist and had the men lower me down the ventilator. When I got to the bottom, I found some smoldering pieces of what looked like oil-cloth. I had just begun stamping out the embers when suddenly a current of air came from below, which instantly supplied enough oxygen to start the blaze and the smoke again. I realized that somebody must have started a blower in the engine-room, and that I was in great danger. So I pulled on the rope, and in a few seconds I was yanked out of the ventilator at a bewildering speed, and landed on the deck in a very undignified way. A few buckets of water put the fire out easily. When I reported the circumstance to the captain, his only comment was that I had been "very foolish."

We transferred the burned men to the hospital, where several of them died. I remember that the diagnosis of the doctors at the hospital was favorable in the case of men who suffered a great deal of pain, and unfavorable in the case of men who did not.

As executive officer of the ship, I was in charge of all funerals. One forenoon, while the services were being conducted over the bodies of two of the men in a large inclosure, where I had about two hundred sailors drawn up in infantry formation, I was horrified to hear the Porto Rican band, which was there to play appropriate music, start a waltz. I did not like to interrupt the proceedings, thinking it would do more harm than good; and I was glad afterward that I had not, because after a minute or two I realized that the band was playing "Nearer, My God, to Thee," though too fast.

We went to Pensacola, and held our target practice

there, on target waters just outside of Pensacola Bay, where Sims had had a number of his new kind of targets anchored. Our preparations for target practice were somewhat delayed by the delightful hospitality of the people on shore and by their charming efforts to make us like Pensacola. In cases such as this it is absolutely necessary to adopt one of two courses, either to refrain from social distractions altogether or else to go into them liberally. I have never known any intermediate course to succeed. In our case, we were taken by surprise. If the admiral had known the scale on which the entertainments had been laid out, he might have been able to arrange some plan; but as it was, having accepted two or three invitations at the start, he was almost obliged to go through the whole program. As a fact, no ill result seemed to follow, although the target practice was somewhat delayed; because, when the target practice was finally carried out, it was so successful in every way as to be the best target practice the navy had ever held, and to justify all the claims that Sims has made. It was, in fact, the basis of all target practices held by our navy since that time.

An essential part of the new target practice was "spotting," a procedure by which officers aloft noted how far the projectiles fell short of the target or beyond it, and estimated by various means how much the range at which those projectiles were fired should be increased or decreased. Sims had learned the method from Captain Sir Percy Scott on board the *Terrible*, in Asia; but of course "spotting" was exactly what I had done at the Battle of Manila, several years before Scott, when I stationed myself aloft with my stadimeter and "spotted" the *Petrel's* projectiles.

Realizing that my act at Manila was really epochal, in that it initiated a new epoch in naval gunnery, it is interesting to remember that I had considerable difficulty in persuading the captain of the *Petrel* to let me undertake what he considered an unduly hazardous performance, in

a position aloft, where, as he smilingly expressed it, the "gravimetric density" due to enemy's projectiles would be too great. The night before the battle I overheard some sailors talking about the project. One of them seemed to express the opinion of the party present when he said, "We 'll see old Fiske coming down out of that perch like the devil was after him."

During the latter part of my stay in the *Massachusetts* I devised what seemed to me a very considerable improvement over the "Morris Tube," a sighting-machine that was really a machine instead of a crude apparatus, and so designed that it could be standardized, and identical instruments supplied to all ships. It also provided for recording on a blank form, reduced to scale, the hits made. This gave a mathematically correct means for gaging any man's skill, for determining his rate of improvement, and for comparing the skill of men even in different ships. I had a crude instrument made on board, which I showed to many officers, including Sims.

After I left the ship, the Western Electric Company had an instrument made for me, which, though far from perfect, was a distinct step in advance; and they patented the instrument in my name. We did not get any encouragement from the Bureau of Ordnance, however, and I took up another line of work that seemed more promising. Some time in the winter of 1906-07, Lieutenant M—— said to me that the Bureau of Ordnance had ordered him to take up my sighting-machine seriously and make an apparatus for trial in service. I was unable afterward to hear what progress was made; but in the spring of 1908 Commander McKean showed me blue prints of a "... dotter," named after Lieutenant M——, which was being put in to the ships. I saw that the "dotter" was identical with my "sighting-machine," except that the best part had been omitted. I protested to the bureau that this was my invention with the best part left out, and that the apparatus, as made, could not possibly be good. The bureau suppressed the name of M——,

and not long afterward withdrew the machine from service. Too bad; it was a very good scheme, and could easily have been made a splendid machine for training gun-pointers.

Before the target practice was held, my promotion to the grade of commander became due. In those days the change from lieutenant-commander to commander was the greatest change that took place in an officer's career—greater even than the change from captain to rear-admiral; because it removed an officer altogether from the class of subordinate officers, where he had little personal responsibility, to the status of "command rank." Naturally, I was eager to become a commander, to give up my very exacting, but subordinate, duties as executive officer, and to assume those responsible duties which the ripe age of forty-nine seemed to indicate as proper; but I was so intensely interested in the approaching target practice that I asked to be kept as executive officer until after it had been completed, and to have my examination postponed.

My request was granted; and I have been glad ever since that I was able to take part in the first modern target practice our fleet had ever held; and to remember also that I had taken part, when in the *San Francisco* in 1894, in the first modern target practice that any single United States ship had ever held.

I was detached from the *Massachusetts* in Boston in the early part of May, 1903, and I walked from the gangway of the ship to the shore, realizing that I had left the life of a subordinate officer behind me forever.

CHAPTER XXV

TURRET RANGE-FINDER, FOUR-ARM SEMAPHORE, PRIZE ESSAY AND NAVAL STRATEGY

SHORTLY after arriving home, I was ordered for examination for promotion to the grade of commander. My previous examination, for promotion to the grade of lieutenant-commander, had been made in Manila four years previous, and had been a physical examination only, because the phraseology of the act of Congress increasing the navy, passed a few months after the Battle of Manila, was such that no other examination was required. On my examination in Manila the doctors laid little stress on any abnormal sounds they heard from the heart. In fact, one of the doctors said there were no abnormal sounds, and that the heart was all right. This was a considerable surprise to me, because I had always supposed that, if a man had organic heart disease, his heart would get progressively worse, while mine seemed to be getting progressively better since my examination for master in 1882. On my examination for commander, one of the doctors on the board was one who had been on the board also four years before in Manila. This doctor insisted that he did hear abnormal sounds from the heart, but the other doctors said they did not. So I was passed, and not only physically, but professionally, and in other ways besides.

During my cruise in the *Massachusetts* I had become impressed with the idea that the navy was laying too much stress on spotting and not enough on range-finding. During the latter part of my stay on shore, before I went to the *Massachusetts*, I had had constructed and installed on board the *Cincinnati* an apparatus in which the two ob-

serving-stations at the ends of the ship were in little stationary turrets, and in which my regular "Wheatstone-bridge" apparatus was supplemented by a very simple arrangement of telephones, with a sort of sliding-rule, which formed a range-finder system of itself. In other words, I installed two separate range-finders in the *Cincinnati*, with the idea of finding out which of the two was the better. At the same time the *Cincinnati* received a Barr & Stroud Range-finder, which was an optical instrument needing only one observer, and much simpler than mine. When the report of the *Cincinnati* came in, after several months, it declared in effect that the Barr & Stroud Range-finder was so much the best of the three that it was the only one worth considering.

I agreed with this report, and said so to everybody. I realized, however, that there were many conditions of the atmosphere when my electric range-finder could be used, and the other could not; for the reason that, if the atmosphere was misty or the light was poor, observations could not be made at all with the Barr & Stroud, because the numerous reflections and refractions in it caused great loss of light; while my range-finder could be used perfectly well. I determined to hold this in reserve for a while, however, and to bring my range-finder forward again, after the navy should have come to realize the limitations of the Barr & Stroud. During the last few years many officers have asked me to have my range-finder tried again; but the limitations of being able to work only twelve hours a day, and the opposing claims of other duties, have blocked the way.

The adoption of the Barr & Stroud Range-finder, however, by our navy, the comparative ease with which a man learned to use it, and its accuracy, indicated to me that the range-finder should be the basis of our target-practice and gunnery-training system, and that spotting should be made auxiliary to it. I was able to get very few officers to agree with me. It was insisted that the range-finder was inaccurate, and instances of inaccurate

measurements were cited; and when I answered that those inaccurate measurements could largely be prevented by training men more carefully to use range-finders, and by making range-finders with a longer base-line, I could make no headway whatever. Sims had the navy committed to a "fire-control system" that relied almost wholly upon spotting, and the range-finder, while not rejected altogether, was not seriously regarded.

I had also become impressed some years before with the extreme vulnerability of all range-finders on board ship, the shortness of the base-line they used, and the difficulty of getting good communication between the range-finders and the gun-pointers inside the turrets whereby the latter could learn the indications of the range-finders. While pondering over this matter one day, the idea occurred to me that all these troubles could be obviated by so combining and constructing a turret and a one-observer range-finder that the two would operate together, the range-finder being inside the turret, with only its two object-glasses exposed, and being turned toward the target by the same revolution of the turret that brought its guns to bear on the target, the full diameter of the turret being available as a base-line.

On June 28, 1900, I applied for a patent on a "combined range-finder and turret." I did not have any serious trouble with the Patent Office, and a broad patent was finally issued bearing the date November 20, 1900. The first claim of this patent read as follows:

"The combination with a revolving turret of an optical range finder carried thereon and constituting a permanent fixture thereof, whereby the range finder will be trained on the target by the rotation of the turret; said range finder comprising a telescope and two reflectors; said reflectors being secured at approximately the opposite ends of a diameter of the turret, which diameter thereby constitutes the base line of the finder; and means for vertically aligning the rays which come from a distant object to said opposite ends of the base line, substantially as set forth."

In the specification of my patent application I was careful to point out that my invention was not restricted to using any special kind of range-finder, and I showed two diagrams that illustrated the two principal kinds of optical range-finders, in one of which classes the Barr & Stroud Range-Finder belonged.

Shortly after arriving home, I went to Washington to suggest to Commodore O'Neill, chief of the Bureau of Ordnance, the advisability of taking up the development of my turret range-finder. I showed him my patent, pointed out the advantages that my scheme seemed to offer, suggested that he have me put on the duty of developing it into a practical instrument, and added that I was perfectly willing to make a present of my patent to the bureau. To my great surprise, O'Neill would not consider the scheme seriously. He said a range-finder was too delicate a thing to stand being mounted on a turret, because the concussion of the guns would disable it, or at least throw it out of adjustment. Arguments were of no avail. O'Neill would have nothing whatever to do with a project that in his opinion he frankly declared to be wholly impracticable. He would not even ask the department to let me stay on "waiting orders" for a while in order to develop it at my own expense.

On my way back to New York I determined to develop it myself, or at least start to do so, and to seize whatever opportunities I might get later. Hardly had I started, when I got orders to attend the summer course at the war college. I succeeded in getting two weeks' delay, and in this time I completed my design and got the Western Electric Company to start some mechanics on making the instrument. The instrument was completed in the autumn, and I received the permission of the Bureau of Ordnance to secure it in position on top of a turret in the battle-ship *Maine* (the second *Maine*), and to have its ability to withstand the concussion of gun-fire tested at the next target practice.

When the annual class of the war college was formed

in the summer of 1903, I was one of the members of the class. The president of the college then was Captain F. E. Chadwick, who had been Sampson's chief of staff during the Spanish War.

One forenoon during the course Admiral Luce made an informal address that gave me the first clear idea I had ever had about war and the way it is carried on. Before hearing Luce talk that bright summer morning, I had had a vague idea that a war was merely a situation in which great numbers of men or of ships fought one another. I had had no clear idea connected with war except that of fighting.

After the brief, but vividly illuminating, talk of Luce I realized that a war is a contest, and that *fighting is merely a means of deciding the contest*. I realized that, in every war, there is a conflict not only of purposes, but also of ideas, and that this conflict of ideas is not only in the causes of the war, but also in the way in which the contestants on each side wage the contest. I saw that in every war each side tries to effect some purpose, and that it merely uses fighting to effect the purpose. I saw that the side which understands its purpose the most clearly, which selects the best way of accomplishing its purpose, and which has the best machine ready when war breaks out, *must win*. I saw that war differs from all the other activities of men in one way only, in being the most important activity; and that the same qualities of foresight, preparation, and energy which affect success in all other activities affect success in war.

I have never forgotten that brief address of Admiral Luce and the illumination which it brought, and I shall never forget that Admiral Luce then said that he himself had always supposed that war was merely a matter of fighting until he happened to have a conversation with General Sherman not long before Sherman took Atlanta, in which Sherman told him what he was going to do. *Luce said he suddenly realized that war was a matter of brains; that Sherman was simply carrying out a plan*

which he had previously conceived in his mind, and that fighting is merely the instrument for carrying out one's thought in war, just as the pen is an instrument for recording one's thought on paper.

The course at the war college that summer of 1903 was much like my previous course there in 1896. The war college had become somewhat more firmly established, however, and it now lived in a handsome granite mansion, instead of in a "poor house." The fact that Admiral, then Captain, Mahan had been put on the strategy board in Washington during the Spanish War, and that many of the calculations which the war college had made in the matter of transportation of supplies and the use of supply vessels and scouts, had been found valuable by the Navy Department, had made the war college much more respected by most naval officers than it had been before. Nevertheless, the summer at the war college was looked on largely as a vacation, and no one injured his health by too much hard work. We had tactical games and strategic games of interesting kinds; but the games were regarded more lightly than they are regarded now.

When the summer course was over, I was ordered to duty as inspector of ordnance at Cramp's shipyard in Philadelphia. I was not overjoyed with these orders, because I was tied to a house in New York; but I realized that the orders were perfectly proper, and so I reported for duty at Cramp's shipyard in a few days.

Many officers have been on duty as inspectors at Cramp's shipyard. Most of them have not liked the duty very much, so far as the duty itself was concerned; for it has meant dirty hands and face, oil on the clothes, climbing about ships under construction, and many disagreeable things of that kind. But they have realized that such duty gives an officer a more exact idea of engineering and ordnance apparatus as it actually is in ships than any other duty does, and many officers have believed that no officer's education is quite complete unless he has had one year at least of some such duty.

A man gets a good deal of exercise on inspection duty. One usually associates arduous exercise with a thin man, but I recollect one man with some name like Murphy, the foreman of a large gang of men who ran electric wires in the ships then building, who was enormously fat. This poor fellow had to climb up and down ladders, go on his hands and knees along rough decks in narrow passages, and do a good deal of walking about the shipyard, sometimes in very hot weather. He was bewailing his fate to me one day, saying that it was ten times as hard for him to do that kind of work as it would be for me. I said to him:

"Well, there's one good thing about it, it gives you plenty of exercise, and your weight shows that it gives you a good digestion."

"Oh, Mr. Fiske," he answered, "the way I have dyspepsia is something awful!"

My tour of duty at Cramp's shipyard lasted until October, 1905, a little more than two years. The duty was purely of a routine character, and, as I was fairly versed in ordnance, and in mechanical appliances in general, and had excellent assistants, I was able to go to New York frequently and work on the optical "turret range-finder," which I had patented on November 20, 1900, and which I was having made at my own expense by the Western Electric Company.

This range-finder was completed and secured on the after turret of the U. S. S. *Maine* in the latter part of 1903. That winter the fleet went to Pensacola for target practice, as it had done the winter before. After it arrived there, I went to Pensacola from New York, and was kindly given a vacant room on board the *Maine*. My room was on the starboard side of a narrow passage on the port side of the upper deck. Across the passage, which was about four feet wide, was the room of the chief engineer of the ship, an excellent man named Warburton, who had been graduated from the Naval Acad-

emy as a cadet engineer the year after I graduated as a midshipman.

A few mornings after I had joined the *Maine*, just as I had completed my toilet and was about to leave my room, I heard what sounded like a pistol-shot. I did not attach much importance to it, and stepped out in the passageway outside of my door. I saw the executive officer, Lieutenant-Commander T. S. Rodgers, standing there, with a very grave look on his face.

"Did you hear that pistol-shot?" he inquired.

"I heard something," I answered, "that sounded like a pistol-shot." Rodgers put his hand on the door-knob of Warburton's room and hesitated a moment. Then we saw a little stream of blood coming out from under Warburton's door, and Rodgers pulled the door open. There on the floor of his room we saw Warburton lying dead, with a small revolver in his hand. I have never heard any explanation for his act, or that anybody had previously noticed anything peculiar in Warburton's manner or appearance.

I stayed at Pensacola about ten days, during which time the *Maine* took part with the fleet in the regular target practice. Many officers had told me that it was foolish to expect that so delicate an instrument as a range-finder, placed on a turret, could withstand the tremendous concussion produced by the firing of the guns. One of the purposes of my trip to Pensacola was to ascertain whether or not it could do so. This range-finder was secured in position on top of the turret with a wooden cover over it; because this was the only way in which the range-finder could be secured to the turret without cutting holes in the sides of the turret; and, of course, it would have been foolish to cut holes in the sides of the turret before it was known that the range-finder could stand the concussion. Naturally, I did not enjoy the prospect of being on the top of the turret with my range-finder when the first gun was fired. But I found, to my joy, that the

shock of discharge was not very distressing, and that it did not harm the range-finder at all. I found, however, that the range-finder was not sufficiently accurate, and that I should have to throw away most of the instrument and make another one. Fortunately, I had already designed one on another optical principle, which I knew would insure the needed accuracy, though it would entail greater liability to derangement.

Not long after this my office in Philadelphia was extended so as to take charge of the ordnance work then being done by the New York Shipbuilding Company, in Camden, across the river. So I applied for another stenographer, and another one shortly appeared. He came in one morning, and introduced himself as Mr. O'Flaherty. He was one of the most unimpressive men I had ever seen, and a marked contrast to the handsome and dignified gentleman whom he was to assist. He was altogether so unprepossessing in appearance that I thought somebody must have been playing a joke on me, and so I asked him to sit down, not knowing what else to say. Mr. O'Flaherty sat in the office for about two hours, during which time I hoped nobody would come into the office and see him there. Finally, Mr. Thompson left his seat at the typewriter for a moment, leaving a half-written page that he had been slowly and carefully typing. Hardly was he out of his chair, when Mr. O'Flaherty slipped into it, and began to hammer the keys like a Paderewski. In two months Mr. O'Flaherty was running the whole office so far as its interior management was concerned.

The four-arm semaphore system, worked by hand power, was installed in a number of the battle-ships by this time, and working very well; but the department finally concluded that the navy had now arrived at such a state of development, and had so many skilled electricians on board the ships and such complete installations of electrical appliances and workshops, that it would be better to return to the electrical method. So four electric

semaphore apparatus were made, and installed on the *Connecticut*, *Kearsarge*, *Alabama*, and *Kentucky*. By this plan it was practicable to signal thirty-two letters a minute, which could be read in all directions for six sea miles in ordinary weather.

Just after they had all been installed and got ready, and the fleet was going south, the Flag-ship *Connecticut* went under the Brooklyn Bridge. It had been necessary, of course, to lower the mast a few feet in order to go under the bridge; but it had not been necessary to lower the main-topmast so far as to interfere with the semaphore arms. After the *Connecticut* had passed under the bridge, the mast was raised again into position; and just as the final pull was being given to get it into place, the mast-rope carried away, and down came the topmast, shaving the semaphore-arms off the mast!

The ship was bound for the West Indies, where the damage could not be rectified, and the result of the accident was that all the West India cruise, to which I had looked forward so eagerly for demonstrating the value of the four-arm semaphore, was entirely lost. Just then the wireless telegraph became established in full favor, and this fact, combined with the disablement of the *Connecticut's* semaphores, and also the fact that I had to go to sea soon and devote myself to other matters, was a death-blow to the electric four-arm semaphore. Nevertheless, that system is a better system for signaling over the usual distances over which visual signals are sent than any now used in the navy, except of course, the wireless telegraph, or telephone. But these are so superior to all other agencies that they are rapidly becoming the principal means of communication.

The work of changing my turret range-finder was considerable, because the optical design of the new one was entirely different from that of the old one. All the calculations had to be made anew, and trials had to be held for determining if the instrument was theoretically cor-

ready by the spring of 1905, and I received permission from the Bureau of Ordnance to have it put back on the after turret of the *Maine*. I also received permission to be present at the test, but for some reason I was not notified when the tests took place.

When the report of the test finally came in, it stated that the concussion of the gun had jarred the range-finder out of adjustment, so that its indications ceased to be correct. The instrument, however, was not injured.

In forwarding the report of the board, Admiral Evans wrote concerning it:

"From these reports it would seem that this type of range finder has been given a fair and exhaustive test, and has proved that it is not satisfactory for use on board ship as intended by the inventor; that is, mounted on top of or in connection with a heavy turret. The jar of the guns, the lack of fine and easy control of the turret (to which the range finder is rigidly connected as regards train) and the interference of hot gases and smoke, make the location intended for a mounting of this range finder a very poor one. . . . In view of the results obtained, I respectfully recommend that this range finder be removed from the *Maine* while the ship is now in New York."

I had the instrument removed immediately from the *Maine* and taken to the works of the Western Electric Company, where I had those parts strengthened which had been found to be weak. On December 12, 1905, I wrote the bureau requesting permission to put it back for further tests, stating that "I have strengthened in every way I can think of the turret range-finder that was tested in the *Maine*." The last sentence in my letter read, "One series of ten observations on an object 6580 yards distant had an average error of only 51½ yards at that distance." This was great accuracy in those days.

The bureau referred my request to Admiral Evans for his recommendation, and Admiral Evans wrote to the bureau, "I do not deem that further test of this range finder is advisable." Then the bureau wrote to me, "In view of the statement contained in a preceding endorse-

ment [Admiral Evans' recommendation] the Bureau will not recommend further tests of this range finder."

I wrote back to the bureau that there seemed to be a misunderstanding to the effect that the range-finder I then wished to submit was the same as the one previously tried, whereas I had spent five hundred dollars in making changes, and asking for a reconsideration. The reconsideration was not accorded me.

On May 3, 1906, while I was in command of the *Minneapolis*, I wrote another letter to the bureau, pointing out that, in view of the increased accuracy of guns, increased uniformity of powder, and the increase in accuracy of gunnery in all navies, it would soon become vitally necessary to have range-finders of longer base than those at present used, and to have them and their observers in protected positions. In view of these facts, I again requested permission to have my turret range-finder installed on the after turret of the *Maine*. In reply the Bureau of Ordnance wrote:

"As the Commander in Chief of the U. S. Atlantic Fleet has already given this device a trial aboard the U. S. F. S. *Maine*, has submitted an adverse report on it, and has recommended that no further tests be made, the Bureau must decline to take further action in the matter.

(Signed) "N. E. MASON,
"Chief of Bureau of Ordnance."

On May 11, 1906, I wrote back to the bureau, saying that I had explained unofficially to Admiral Evans the changes I had made in the range-finder, and that he had told me that, if the improved range-finder were put into the *Maine* when she returned to New York in the following spring, he would be glad to give it a fair and rigid trial.

The bureau submitted my letter to Admiral Evans, and he replied again unfavorably. The last paragraph of his indorsement on the letter of the Bureau of Ordnance embodied the gist of his objections. It read as follows:

"The location of a range-finder in a turret is very poor for many obvious reasons. Unless the other qualities of this range-finder are such as to outweigh these disadvantages, it is not recommended for further experiment with such a range-finder."

The bureau then wrote me:

"The Bureau is not prepared to make a further test of the turret range-finder."

I saw that it was useless to "kick against the pricks," and so I decided to wait until some favorable opportunity should present itself.

Ever since the talk of Admiral Luce at the war college in the summer of 1903 a thought had kept coming to me continually, that there was a lack in the navy, and especially in the management of the navy, of that comprehension of the actual nature of war which Luce said he had received from Sherman, and which Luce had tried to impart to us. It seemed to me that the navy was concerned wholly with the material guns and ships and men, and devoting very little thought to the methods by which the guns and ships should be operated, or even to the strategic principles which should govern their construction. I realized more clearly the truth of the lessons which Captain Taylor had been trying to teach us, and which Mahan had been trying to teach the world in his "Influence of Sea Power on History." From their point of view, the navy consisted of many agencies, such as the various bureaus, men, ships, and guns, but without any head which could give them direction for the purposes of war except the secretary of the navy. Of course there was a secretary of the navy, and the work of giving these activities direction devolved upon him. But he was a civilian untrained in war, and without any guide except his own mental abilities, to enable him to direct these agencies toward a given object or to decide what the object ought to be.

Naturally, it was clear that the secretary could direct all those agencies by simply telling each agency what to do, just as a child can move the pieces on a chess-board. It was also clear that the secretary could direct all those agencies toward any objective that he wished, just as a child could point a pistol in any direction he wished. I remembered what the old sailor had said to me in 1873, that it was easy to be a naval officer, but hard to be a good one, and this made me see that it must be easy for a man to be secretary of the navy, but *actually impossible* for a man to be a really efficient secretary of the navy if called upon to prepare a navy for war or to operate a navy in war against a navy directed by a skilful strategist unless he were a skilful strategist himself. I began to see that the question of success in war depends on skill in preparing for war and in conducting it, and that the most important thing in any navy is the same as the most important thing in any man—the head. These ideas got such hold on me that they had to come out, and they finally resulted in an essay called “American Naval Policy,” which I submitted to the United States Institute in December, 1904.

This essay was pessimistic in the last degree, and found fault with nearly everything in the navy, and praised almost nothing; but it was constructive and not destructive, because it proposed a remedy. The remedy, of course, was a general staff, which should study continually the situations which the navy might have to meet, and which should devise measures by which the navy could meet them successfully.

Rear-Admiral Henry C. Taylor had been made chief of the Bureau of Navigation after being president of the war college, and had been successful in a moderate way in making the navy see the light, and had got the General Board established and a concentrated fleet formed in the North Atlantic. But Taylor had died about a year before, and left the navy without a leader. My essay

was an effort to set forth what I knew to be substantially his views.

When the Naval Institute announced the outcome of the annual contest for the prize essay, it announced that my essay had received the first prize, which was two hundred dollars and a gold medal, and that Admiral Luce had received the second prize. When these two essays came to be read afterward, it was seen that, although the title of my essay was "American Naval Policy," and the title of his essay was "Naval Administration," they preached the same doctrine and reached virtually identical conclusions. Both preached the doctrine that men, guns, and ships are simply the instruments with which war is carried on, and both reached the conclusion that, if our men, ships, and guns were to be made to fight effectively, they must be directed toward the correct objective, and made to work together toward that objective. The further conclusion was that the only possible way by which to achieve these results was to have the navy directed by a general staff.

One sentence in the latter part of my essay, in which I was leading up to the conclusion, read,

"Incredible as it may appear, it seems nevertheless to be a fact that our naval establishment, enormous as it is, and the guardian of the wealth of the wealthiest country in the world, has simply been put together piecemeal, and has never been directed by a policy based on fundamental principles. It has never had the advantage of such direction as has been given to commercial organizations by men who made a special study of the policy that should direct them; by boards of directors, led by men like Scott, Westinghouse, Rockefeller, Huntington, Carnegie and Cassatt. These men devoted their lives to furthering the aims of their respective companies; and they understood the aims of their companies from a standpoint so far removed from the details, that they were able to direct the details, instead of being directed by them."

After comparing the administration of the Navy Department with the administration of all other organiza-

tions in the world, commercial, military, and naval, the following paragraph was put forward:

"We see, therefore, that our navy is administered by a policy which is the reverse of that of every other large organization of the world."

The argument then pointed out that, in order to justify such a system of administration, it would be necessary to prove that it was better than the others. Some pages of argument then followed to show that this could not possibly be proved; in fact, that it was not true.

The essay closed by declaring the excellence of our men, ships, and guns, and admitting the great importance of technical matters; and then the following sentence was put forward:

"But the very fact of the tremendous importance of technical matters is the greatest reason why they should be directed aright to get the military results we need."

The need for action was then urged in securing the establishment of a general staff and in giving that staff executive authority. In an endeavor to allay the fear which has been the greatest handicap the navy has suffered from during all its life, the fear that the "power" of the secretary would be lessened, the following sentence was written, "No authority given to a subordinate can truly be said to lessen the power of his superior."

It is an extraordinary fact, which I have never been quite able to explain, that it seems almost impossible to make a man who has not had military training realize that power delegated to a subordinate by a chief does not lessen the power of that chief.

The essay was extraordinarily successful. I think I am right in saying that that essay received more favorable attention than any other essay that has ever been published by the Institute before or since. It was approved by naval officers everywhere and commented on favorably in the public press; but of course it made no impression on the minds of the only people who could exert any influence in the matter, the members of Con-

gress. The country was so thoroughly committed to the proposition that the military must be subordinate to the civil authority that no amount of subordination seemed to be excessive.

Secretary Long had written a book called "The New Navy," at the extreme end of which he warned the people against having a general staff. His argument was based wholly upon the assumption that it would lessen the "power" of the secretary, and on the further assumption that it would be a calamity to have his power lessened. Not a word was said about the efficiency of the navy or about its effectiveness in doing the work which the country expected it to do. This has been the case with all arguments against a general staff not only for the navy but also for the army. The arguments in favor of a general staff, on the other hand, have not been based on any personal or political considerations, but wholly on questions of efficiency and effectiveness.

In other words, the opposition to a general staff has been political, and the efforts for a general staff have been national. Politicians in all countries have always been opposed to what they call "militarism," which they have persuaded the people to think menaces their liberties. Militarism does not menace the liberties of the people, but it does menace the irresponsible powers of politicians. The correct meaning of the word militarism has the same connection with the word military that the correct meaning of the word "pacifism" has with "pacific," that "realism" has with "realistic," "empiricism" with "empiric" and "symbolism" with "symbolic," that any noun ending with "ism" has with its corresponding adjective. Militarism, *in its correct meaning*, stands for something that is good and strong and honest and efficient in a country.

In my prize essay I devoted much attention also to a controversy which was then raging vigorously, and on occasions bitterly. The controversy was about the building of larger battle-ships. The great majority of

officers felt that the largest ships then in existence, which had a displacement of 16,000 tons, like our *Connecticut*, were at the extreme limit of effective size, if, in fact, they were not really beyond it. These officers represented the conservative element, but were led by no less a person than Mahan. It was stated, however, that the Japanese were about to build battle-ships of 18,000 tons, and that the English were actually building the *Dreadnought* of 18,000 tons. In my essay I argued about the subject from different points of view, engineering, tactical, and strategic, and concluded that we should proceed to build ships of 20,000 tons at once, and prepare to build larger ships afterward. I summed up as follows:

"We may accept it as a principle, therefore, that we should make our battle-ships as large as the state of the engineering arts permits."

My essay appeared in March, 1905. At the following session of Congress, one year later, the *Delaware*, of 20,000 tons, was authorized, and in the following year her sister-ship the *North Dakota* was authorized. Since then our ships have been growing steadily larger and larger, as the progress of the engineering arts has made larger and larger castings and forgings practicable. In September, 1905, in order to answer the criticisms of some officers who held that I had gone too far in advocating 20,000-ton battle-ships, I wrote an essay for the Naval Institute, which I called "Compromiseless Ships," in which I pointed out that the larger a ship is, the fewer compromises have to be made in her construction, in adjusting the conflicting claims of gunnery power, armor protection, and speed; and that a 20,000-ton ship, while not quite a compromiseless ship, would be much more nearly so than a smaller ship. Part of the argument was based on assumption that by the time such ships were built, the torpedo would have a range of 4000 yards; so that the guns of an enemy would be kept away that distance, thus permitting lighter armor than if the torpedo range was shorter. The question of big ships was then

being so hotly discussed that this paper attracted a great deal of attention from the press. Curiously, the idea of being able to fire torpedoes 4000 yards was considered a weak point in my argument, because such a range was considered impossible. Even *London Engineering*, in its issue of November 17, 1905, said, at the conclusion of a long editorial which had spoken most commendingly of my paper, "But we wish he had not placed so much confidence in a broadside of torpedoes at 4000 yards." And now torpedoes have gone 13,000 yards and more!

Before leaving New York to join the *Petrel* in 1896, I had given a power of attorney in the matter of my telescope sight and other inventions, owned by the American Range Finder Company, to Park Benjamin, who had been the patent attorney who took out the patents. After my departure, the company ascertained that the Bureau of Ordnance was infringing the patents they owned; and so after many letters had been interchanged, and other things had been done which I did not hear about until afterward, the company brought suit in November, 1899, against the Newport News Shipbuilding and Dry Dock Company, and also against George N. Saegmuller, for infringing the patent of my telescope sight, alleging that he was using and manufacturing things patented. I was told that the company finally sold the Bureau of Ordnance the right to use the telescope sight for the sum of \$10,000. This was a most foolish act.

About 1900 the American Range Finder Company was bought out by Charles B. Van Nostrand, one of the original directors, who had lost about \$30,000 by the undertaking. The expense of keeping up my foreign patents had caused the abandoning one after another of all those patents with the exception of my telescope sight patents in France and Great Britain. As my contract with the company was that I should receive one fifth of the profits, and as there had been no profits, I had received no money; but as my contract did not say

that I should pay one fifth of the losses, I did not have to pay out any money. Of course it was to my interest, from a purely business point of view, to persuade Mr. Van Nostrand to keep up the French and British patents, no matter what it might cost him, in the hope that the French and British Governments would pay for the use of my patents, as they ought to do. In 1905, however, I advised him to give up the French patents, as we saw little chance of bringing any pressure on the French Government. Mr. Van Nostrand and I thought, however, that we had a good chance with the British Government, whose declared policy was to pay for patents which they infringed, and as we both knew some important people in London, we thought that the British Government might be induced to do so in the case of my patents. After trying for a couple of years, however, at considerable additional expense to Mr. Van Nostrand, I advised him not to spend any more money on the project, but to let the patents go. This he did.

The Wireless Telegraph Board was formed about this time, and I was made a member of it. The two other members were Captain John A. Rogers and my classmate Peters. We used the *Topeka* and the lighthouse station on the Highlands at Navesink, New Jersey, as sending and receiving stations, the *Topeka* going out and back, and the members of the board taking turns at the two stations. One bright hot forenoon, when my station was on shore I could see the *Topeka* hardly more than a mile away, but could not exchange any signals whatever by wireless on account of the static in the air. So we signaled back and forth by means of the ordinary signal-flag, and then the *Topeka* started off. As the day grew older, the static in the air diminished, and we were able to signal over considerable distances. On one occasion we established a record for wireless telegraph, 158 miles.

In December, 1905, I published an article in the *Naval Institute*, called "The Stadimeter in Fire Control."

The purpose of the article was to point out from measurements made by myself of distant objects, whose distances and height were accurately known, that the accuracy of the stadimeter was very much greater than was ordinarily supposed; that with an object 151½ feet high at 6580 yards, the average error was only 35½ yards; and that, if it were carefully adjusted, the stadimeter would be a most valuable instrument in "fire control"; that is, in controlling the fire of the guns of a ship. Of course this was my intent when I invented the instrument in 1890, and this was the use to which I put it at the Battle of Manila, the first time that "spotting" was ever done. Ranges increased so rapidly after my article was published, however, that the stadimeter fell behind the requirements. So I invented and developed my "horizometer," which is merely an improvement though a very considerable improvement over the stadimeter.

In January, 1906, I published an article in the *Naval Institute* called "Why Togo Won." The gist of the article was that Admiral Togo had won because he had prepared his fleet better than Admiral Rojesvensky had prepared his, and that the difference lay in the realism of the preparation.

One sentence was "In the battle of the Sea of Japan, the Russians went into battle for the first time, while the Japanese had been in battle only ten months before; many of their officers had seen service in the war with China, and all had had the tremendous advantage of battle training and experience." Another sentence was, "The best preparation for a given work is to rehearse it under conditions as close as possible to those under which the real work itself will have to be performed." The article was a protest against the routine into which the fleet was falling, and the unrealistic character of the fleet drills, even of the target practice.

CHAPTER XXVI

COMMANDING THE MINNEAPOLIS

IN early March, 1906, I received orders to command the U. S. S. *Minneapolis*, then at Hampton Roads. The *Minneapolis* and the *Columbia* were the two fastest vessels in the navy. They were 412 feet long, and had a speed of twenty-three knots on their trial trips. I reported on board, relieving Captain James M. Miller on March 10, and assumed command that day.

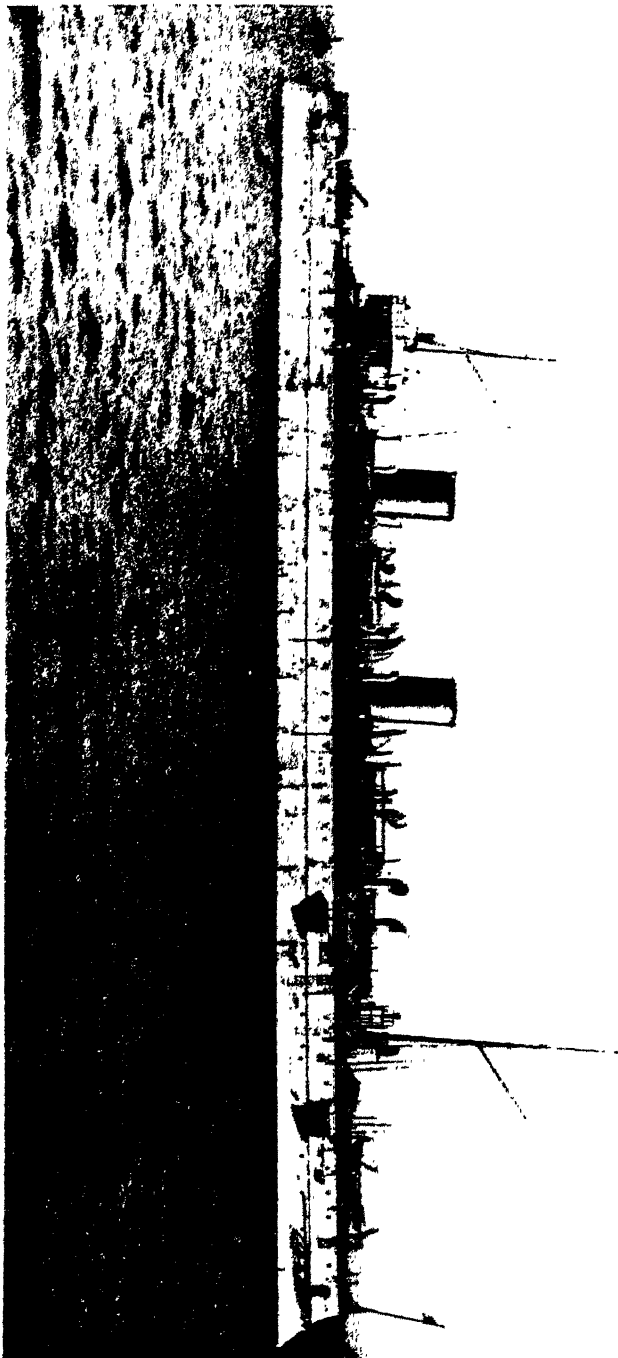
My feelings on assuming command were the reverse of joyous. I was only three months short of being fifty-two years old, and I had always heard that if a man arrived at a command position after the age of forty, he was too old to discharge its duties well. I had always heard that it was absolutely necessary for a man to become accustomed to independent responsibility early in life, and that if a man had those responsibilities fall on him when he had passed his prime, he was apt to break down under the load. I realized that if anybody was liable to break down for those reasons, I was, because I was of a highly nervous temperament, and circumstances had been such that I had never handled a ship at all myself. Two minute exceptions were moving the *Petrel* on from one anchorage to another about two hundred yards distant, and taking the *Manila* out into Manila Bay. But here I was in command of a ship that everybody knew was hard to handle, because she was so long and narrow.

So, when I went on deck with Captain Miller, and saw all my future crew standing on the deck looking at me, I seemed to see in front of my eyes the words which I had once seen on the outside of a book of Victor Hugo's, "Les derniers jours d'un condamné."

A few days afterward I had to get the ship under way and go to Newport News. I realized that I had to go there and anchor with the tide, that there were a great many schooners in the way, and that there would probably be many schooners where I should want to anchor. I handled ships a great many times after that, but I never had a more difficult task than the one given to me that day. The strange part of it is that I never did better than I did that day. Inwardly, I was badly frightened; but I have always found that the more frightened I was beforehand, the better I have done. I remember my father telling me that whenever he started to make a speech, and felt perfectly master of himself and perfectly calm, he was always dull.

Two months later my mother died, and we took her body to our family burying-ground in Auburn, New York, my two brothers, my sister, and I. Her death broke a bond that was stronger than I realized, and even now I find myself occasionally forgetting that she is dead, and thinking that I will tell her something. As we walked back from the burying-ground, I remember saying to my brothers and sister, who were younger than I, "It's my turn next."

That summer the Naval Academy Practice Squadron consisted of the *Minneapolis*, *Denver*, *Cleveland*, and *Des Moines*, the *Minneapolis* being the flag-ship, and carrying the flag of Rear-Admiral Royal Bird Bradford. We started from Hampton Roads on the fifteenth of June, and were caught by a strong gale on the following day. The condition of the poor midshipmen on board those four ships, crowded together as they were and dreadfully seasick, was deplorable; but it was over in a few days, and bright sunshine and smooth seas convoyed us to Madeira. A week's stay in that wonderfully beautiful and picturesque island, with an occasional glass of old Madeira, trips up and down the steep slopes of the mountains, and some quiet dinners at quiet homes, left many pleasant pictures in my mind, as like experiences



U.S.S. Minneapolis

U. S. S. MINNEAPOLIS

have done in the minds of thousands of other sailors during many years. One of the wise remarks that I bore away in my memory from Madeira was made by a pretty Portuguese girl who spoke English very well. During a conversation after dinner with a little party she said to me, in reply to some remark which I had made, "But, Captain, it seems to me that you are confusing happiness and pleasure; you know they are very different things."

We went from Madeira to the Azores. About an hour after leaving the anchorage, while I was still on the bridge, a stowaway was brought to me, who had been discovered under the cover of one of the boats. He was perhaps fourteen years old, and was badly frightened and crying bitterly. He talked English a little, and told me he wanted to go to the United States.

At this time there was a desire among the young men of Madeira to get to the United States; I suppose it was some sort of vague ambition. But Madeira was so much more beautiful than almost any place in the United States, the climate was so much better, and the conditions under which people lived there were so much pleasanter than the conditions under which they would have to live if they came to the United States, that I was very glad to be able to put the boy ashore at Fayal, in the Azores, two days later, and have arrangements made for sending him back home.

It is sometimes said, by way of reproach about somebody, that he does not know when he is well off. Does not this remark apply to every descendant of Adam and Eve, just as it applied to Adam and Eve themselves? Nations rise and fall, some become highly civilized, and some do not; but have human beings themselves changed in all the ages? Are they any better or happier or wiser than were their ancestors thousands of years ago, or than are the inhabitants of Samoa now? Our railroad tracks and our canals and our cities are, after all, mere scratches on the surface of the earth, and the earth turns round at the same speed, and goes around the sun

in the same time, and the seasons come and go, just as if we were not here at all. "Why do the heathen rage?" Perhaps it is for the same reason as that which impels a man to walk briskly in the keen, fresh air, that impels a boy to play, a baby to crawl, a dog to bark, and a flower to grow—the desire to expend stored-up energy.

We had a pleasant trip westward from the Azores until within about two days' steaming of our destination, which was Bar Harbor, Maine. Then we ran into one of these dense fogs prevalent in this part of the world in summer. We kept going ahead, nevertheless, the *Minneapolis* leading, and finally anchored in the haven where we would be, still in a dense fog. Navigating in a fog is one of the most nerve-trying things that the captain and the navigator of a ship have to do.

The fog persisted for two more days, and then Admiral Bradford hauled down his flag, having reached the retiring age of sixty-two. The instant that that flag came down he was changed in the twinkling of an eye from an officer of high command in the navy of the United States into a simple pensioner of the Government.

Before one o'clock all the officers and men were drawn up on deck, and the admiral's barge rode at the gangway, but without the admiral's flag; then the admiral came on deck, shook hands with all the officers, made a brief speech to the men, and passed over the gangway to the barge. Then the band played "Should auld acquaintance be forgot," and a retired rear-admiral steamed slowly to the shore.

I had occupied the starboard cabin of the *Minneapolis*, and Bradford the port cabin. I had had a steward, a cook, and one mess attendant, or servant; Bradford had had a steward, a cook, and two mess attendants. By some oversight, Bradford's servants were not detached when he left the ship; and so, when I moved into Bradford's cabin, which I did at once, I had two stewards, two cooks, and three mess attendants, besides the or-

derly, who was always at the cabin door, and my gig's crew. Captains of ships do not have gig's crews now, because they have no gigs; but in those days, and in all previous times, every captain of a ship had a gig, a long, narrow boat, pulled by oars, for his exclusive use.

One of Bradford's mess attendants was a Japanese named Janasuki. He was tall, good-looking, and of serious demeanor. Some months before, when at Norfolk, Bradford had called me into his cabin one morning and told me that Janasuki had gone ashore the day before with his permission, but had not returned, and that he wished that I would offer a reward for Janasuki's apprehension by the police. An hour later he sent for me again, and showed me a letter which he had received from a hospital in Norfolk, saying that Janasuki was there for treatment for nervous shock; that Janasuki had gone to a dentist the day before, and had twenty-four teeth extracted.

Janasuki appeared on board in about three days without any teeth. On being asked why he had all his teeth taken out, he said that his teeth were somewhat irregular, and he thought that artificial teeth would look better.

Janasuki got an entire new set of teeth, but it took him some time to get used to them. During the time when he was accustoming himself to them, he used to wear his false teeth on dress occasions. Shortly after Bradford left, I found Janasuki reading Emerson's essays. I told him that this showed good taste, but that I might be able to find him a book that would be more interesting to him; and I got him Kipling's "Plain Tales from the Hills." A few days afterward, I asked him which book he liked the better. Janasuki answered in his precise fashion as follows:

"Sir, I think that the book of Mr. Kipling is more exciting to the mind, but that the book of Mr. Emerson is more stimulating to the soul; and I think that I need to have my soul stimulated more than I do to have my mind excited." Some months afterward, when I took

command of the monitor *Arkansas*, I took Janasuki with me, for he was a capable and careful servant. I went on a few days' leave at one time, and when I returned to the *Arkansas* I was told that Janasuki was missing, but that he had left a letter for me. I found this letter to be a carefully written one, covering seven pages of foolscap, nearly all of which was taken up with a discussion of the ethics of desertion. His conclusion, which was stated on the next to the last line of his letter, was that it would be wrong for him to desert. The last line, was "Nevertheless, I am going to desert."

I have often wondered who Janasuki was and what became of him. I found out one day, from a probably careless remark from him, that he was an engineer by profession; but I was unable to learn whether he was a highly educated engineer or an upper-grade mechanic. He was a man of fine mind, and was probably engaged on the work he was then performing with some ulterior purpose in view.

My wife and daughter were at Bar Harbor, and we had a pleasant time for a few days. At the end of that time I received orders to assume command of a temporary fifth division of the Atlantic fleet, consisting of the ships that had constituted Admiral Bradford's squadron, and to proceed with them to join the flag of Rear-Admiral Evans, then anchored in Long Island Sound, in readiness for an approaching review by President Roosevelt at Oyster Bay. As Admiral Bradford's staff had gone with him, I had to organize a temporary staff in a hurry, and get ready to manœuvre my division under the eye of the Commander in Chief. I did not look forward to the work with much pleasure; but I got through it without making any mistakes, much to my relief.

About this time it was frequently remarked that Mr. Roosevelt was abnormally favored by good luck. Certainly he was so favored on the day of his review. By the program, he was to embark in a small tug at eleven o'clock and go on board the *Mayflower*, and the *May-*

flower was then to steam past the fleet, down on one side and back on the other; while all the officers and enlisted men were to stand on deck at attention and salute as he went by, the guns of each ship firing the national salute of twenty-one guns. As everybody had to be in full dress uniform, and the ships had to be dressed with flags, we were much concerned the following morning at seeing a depressing light fog, with a southerly wind and a drizzling rain, and no indication of any change. Nevertheless, at ten o'clock I offered to bet ten dollars with the executive officer of the ship that the weather would clear by eleven; but he answered that he was afraid to bet against the President's luck. I then offered to bet with the navigator and other officers, but received the same reply. About five minutes before eleven, the weather suddenly cleared, and it remained clear for the rest of the day.

After the review, which was held on the twenty-fifth of September, 1906, my division was disbanded, and the *Minneapolis* was sent to the Philadelphia navy-yard to get ready to go to Cuba, where conditions were exceedingly disturbed. Our work at Philadelphia was hurried along, and on its completion I received orders to proceed to Havana with all despatch.

On September 20, 1906, the *Minneapolis* was off the coast of North Carolina, proceeding from Philadelphia to Havana at sixteen knots speed. We had left the Philadelphia Navy-Yard two days before, with two battalions of marines and their camp equipage, because a revolt was imminent in Cuba, and the United States intended to prevent it. Marines and soldiers of the regular army were ordered to Cuba in large numbers and with great despatch. The marines, of course, got off first, and those on board the *Minneapolis* were the first detachment. We had four hundred of them, and these, in addition to the regular crew of the ship, made somewhat over eight hundred souls on board.

Shortly before we left Philadelphia there had been a

cyclone to the southward; but this had subsided, and the weather on September the twentieth was clear and pleasant, the only reminder of the cyclone being a smooth and heavy swell.

I turned in about half past ten that evening. About eleven o'clock I was awakened from a sound sleep by a vigorous rapping at my door and a voice calling:

"Captain, Captain."

"Well?"

"Man overboard, sir."

"Man overboard?" I inquired drowsily.

"Yes, sir."

"Very well; I'll go on deck."

By this time I was sufficiently roused to realize that the night was so warm that I need not put on any warm clothing, and that the gold braid on my cap visor would be sufficient identification on deck. So I simply put on my cap, and went up on the quarter-deck with no other clothing than my pajamas.

When I got on the quarter-deck the great darkness prevented my seeing anything at first. But in a few moments my eyes became sufficiently accustomed to the darkness to enable me to see that the two life-boats, which hung on each side of the quarter-deck, were already manned; and that what remained of the quarter-deck where lumber was not stowed, was covered with officers of the ship and marine officers, who, though perfectly quiet, had the air of being astonished at something.

Just then the executive officer, Lieutenant-Commander Stanworth, came up and said:

"Sir, we do not yet know exactly what has happened. I don't think any man has fallen overboard from the ship; but the sergeant of the guard says he heard a man calling for help from the water."

"But the ship has not been stopped," I said; "I hear the engines going now."

"No, sir," he answered, "the officer of the deck put his helm hard aport and headed back."

I sent an order to the officer of the deck to stop the ship, and head her in the direction we had come from, and to turn on both search-lights, and search in every direction. I interrogated Mr. Stanworth further, but found that he knew no more of the situation than he had already told me.

There were a great number of officers congregated near, and I gathered from their remarks that they were thoroughly mystified. I asked some of them if they could give me any information as to what had happened, and none of them could; but they all thought that whoever heard the cry for help was suffering from delusion, because, as one of them said, how could there be anybody out here on the ocean at night, more than fifty miles from shore? I then told Mr. Stanworth that I would go on the bridge, and that I wished him to accompany me. I directed Ensign Howe to take charge of one life-boat and Ensign McCommon of the other, and to be ready to go in search of the man, but not to lower the boats until ordered.

On my way forward to the bridge, which in a ship four hundred and ten feet long took some time, I found the deck full of people conversing in subdued tones. They all stopped talking as I went by, but I could gather from stray remarks that they were more than incredulous as to there having been any cry for help; and I heard such expressions as, "Oh, the sergeant's got rats"; "He's a ———," etc., all along the decks.

On my way forward the sudden realization came to me that I was in command of a ship sent on urgent duty at a critical time, and that I was headed in the wrong direction.

When I got on the bridge the officer of the deck saluted and said:

"Good evening, Captain."

"Good evening, Mr. Cooper. What has happened?"

"I don't know exactly, sir; but a few minutes ago the sergeant of the guard, who is a very reliable man, ran up

here and reported that he heard a man overboard in the water. So I put the helm hard aport and headed back, and now I've got the ship stopped, according to your orders. I've got both search-lights turned on, also, sir."

"So the ship's stopped, and you are headed back in the direction you came from?"

"Yes, sir."

"Where's the sergeant of the guard who made this report?"

"Here, sir." The sergeant stepped forward out of the darkness, saluted, and stood at attention.

"Now, Sergeant, tell me the whole story."

"Well, sir, it had just gone six bells, and I was standing by the port rail of the superstructure-deck, about half-way forward, talking to the chief carpenter's mate. All on a sudden I heard a man right under me, like he was right close to the ship, call out, 'Help!' I heard him as plain as I ever heard anything in my life, sir. So I said to the carpenter's mate, 'Did you hear that man call—' 'Help'?" "No," he said. Just then I heard him call again just the same as before, only not so loud, as if the ship had gone by him a little. 'God Almighty!' said the carpenter's mate,—those are the words he used, sir,—'I heard him that time.' Then I ran up to the officer of the deck as fast I could, sir, and told him just what I told you, sir. That is all I know about it, sir; but here's the carpenter's mate, sir, and he'll tell you the same as I do."

"Carpenter's mate."

"Yes, sir"; and another man came forward and saluted.

"Did you hear any man call, 'Help' from the water?"

"Yes, sir."

"Are you sure?"

"Positive, sir."

The sergeant and the carpenter's mate were evidently sober, and they were perfectly calm. I endeavored to impress them with the seriousness of turning back a ship

bound on urgent duty; but they both assured me with the utmost earnestness that they had heard the cry; and I became convinced that they were at least sincere.

Then I figured out on a piece of paper the most probable direction of the man at the present time, and ordered the officer of the deck to head in that direction, and go at a very slow speed, also to train one search-light in a direction which I indicated and the other in another given direction; but first to lower the life-boats, and order Howe and McCommon to pull just outside of the search-light beams.

Then Mr. Stanworth and I stood together on the port side of the bridge, with our night glasses, looking in what we considered the most probable direction in which to pick up the man, supposing there was one.

Before this time the men had been mustered at quarters, and it had been definitely ascertained that no one had fallen overboard.

"What do you think of this, Stanworth?"

"I don't know quite what to think of it, Captain. I don't see how a man could be overboard out here. My father was a pilot, and I have been among seafaring people all my life, and I think I've read nearly all the sea-stories there are. I never heard of such a thing, but the men seem to be absolutely sure they heard a cry for help."

"I know, but it seems more probable to me that there should be a ventriloquist on board than that there should be a man alone out here on the ocean."

"By George!" said Stanworth, "I never thought of that."

When Stanworth said, "By George," which was the closest approximation to profanity that he allowed himself, I knew that he was roused from the condition of imperturbability in which he habitually lived, and I enjoyed the occasion accordingly.

The events thus far narrated occupied about half an hour; that is, until about seven bells, or half-past eleven.

Up to this time the rapid succession of impressions kept me interested and kept my faith alive; but as the moments wore on, and the search-lights brought out nothing but the water, which they illuminated in greenish-white streaks, I began to doubt more and more the wisdom of my action.

About fifteen minutes before twelve Stanworth said in his quiet voice:

"I think I see something, sir."

"Where?"

"Near the left side of the beam of the forward search-light."

I trained my glass in that direction, but could see nothing. Just then the search-light moved a little to the left, and through my night glass I thought I saw a little white projection sticking above water about two points on the port bow.

"I think I see something, too."

In a few minutes everybody on deck saw it.

"What is it?" came from men scattered all about the decks.

For some time, perhaps five minutes, but it seemed much longer, nothing could be made out of this curious little white elevation.

"I think it 's moving, whatever it is," said Stanworth.

"It seems to me," continued Stanworth, speaking very slowly, "that it moves from right to left and back again, like a pendulum upside down."

"Yes, I think you 're right," I said, and I directed the officer of the deck to head the ship toward the object at very low speed.

The object seemed to be quite small, and it evidently did not move with the undulation of the sea. Its movement had not the same period; it was quicker. It seemed to me as if it must be either a man who was moving from side to side, or else something that was moved by some kind of engine. The movement was perfectly regular.

"By George! sir," exclaimed Stanworth, "I believe it 's a man using a paddle! Now, watch, and see if you don't see the paddle pretty soon. You see, if a man was in a little boat paddling, that is exactly the way his body would swing from right to left."

"Yes, Stanworth, I think you 're right, except that there isn't any boat. The searchlight 's on the thing full tilt; and if there were a boat, we 'd see it."

"Yes," assented Stanworth, "that is what perplexes me; but I think we shall have a solution of the mystery pretty soon. I see our boats pulling for the thing, whatever it is."

I looked, and there were our two life-boats racing, with all the vim and precision that was in them, for the prize. One boat got a little ahead of the other, and soon we saw the white object lifted into one of the boats. Then both boats pulled for the ship.

The men were sent aft to man the life-boats' falls, and I sent word to Surgeon Lumsden that I thought we had picked up a man, and for him to be prepared to receive him in the sick-bay. Then I went aft on the quarter-deck. Both boats soon neared the ship; and in one of them was a man, in dark clothes, sitting in the stern sheets. I hailed the boat and asked if the man was badly hurt, and the man himself replied:

"No sir; I 'm all right."

By this time the surgeon had joined me on the quarter-deck and said:

"Before receiving the man in the sick-bay, sir, I should like to examine him and see if he has any contagious or infectious disease."

"Very well, Doctor; I 'll have the man brought here, and you may examine him as you think best. I 'll not interfere."

The boat was hoisted level with the deck, and the man was passed out, and carried forward by two stout sailors, and brought before the surgeon.

"Can you stand up?" said the surgeon.

"Yes, sir," said the man; and at a sign from me, the two men put him on his feet and let him stand up. He was a man of middle size, with a short brown beard; apparently about thirty-five years old. He had on a shirt and a pair of trousers.

"Have you any contagious or infectious disease?" said the surgeon.

"No, sir."

The doctor put his hand on his pulse and said:

"Open your mouth." The man opened his mouth, and it looked healthy except that his tongue was swollen.

"How long have you been in the water?" said the surgeon.

"Nearly three days, sir."

"How long since you 've had any food?"

"Just three days ago to-night, sir."

"How long since you 've had any water?"

"Same time, sir."

"Do you feel any special pain or distress in any part of your body?"

"Well, I feel pretty tired, but I 'm all right," was the sturdy reply.

He was carried below, and I shall never forget the feeling of admiration with which I looked at this man, so calm and self-possessed after passing through such an ordeal. In my experience I have never known his nerve to be equalled.

About an hour later the surgeon reported that the rescued man was now asleep, and that he thought that there was nothing the matter with him except that the flesh of his arms and thighs was greatly lacerated.

The next day I went down to the sick-bay and found him lying in a cot. He put out his hand and said to me in a cordial, but matter-of-fact, tone:

"I 'm very much obliged to you for saving me, Captain."

"I 'm very glad to have saved you; we sailors have to do these things for each other now and then."

Then, in reply to a question, he told me that his name was George Olsen, and that he had been first mate of the schooner *Twilight*, bound from Charleston to some Northern port. On Monday they had been caught in the cyclone, but had managed to get some supper Monday night. About six o'clock Tuesday morning the schooner had been thrown on her beam-ends, so that her masts rested on the water. The masts almost immediately broke in two, and the schooner went bottom up. He himself was thrown out violently into the water, with a great deal of lumber with which the schooner was laden. This lumber was hurled about by the waves, and he thought that the other men were probably killed by the lumber at that time. He, however, managed to get clear of the wreckage. He then got hold of two boards, and supported himself by putting his arms over them. He had on a pair of thick rubber boots, a heavy oilskin coat, and a sou'wester.

He remained in this position twenty-four hours. At the end of that time the violence of the sea had diminished. He then took the two boards and placed them in the form of a cross, and lashed them together at the cross with a sort of rope, and made by tearing his oilskin coat into strips and tying them together. He then sat astride of this cross, and found a small piece of wood, which he used as a paddle. While in this position, he saw the smoke of several steamers, but could not make the people on board see him. Finally, on Thursday night, he saw the white, green, and red lights of a steamer coming toward him very fast. He paddled as hard as he could until he got directly in front of her; then, as she got very near, he paddled out just clear of her course, and yelled for help with all his might.

"And pretty soon," he said simply, "I saw the ship turn around, and then I knew I was all right."

I kept Olsen on board a month until his flesh had healed. Then we got up a subscription in the ship, and he went home to his wife and family in Sweden.

Our stay in Havana was pleasant, but one night we had an uncomfortable experience. I had gone ashore in the afternoon for a walk, and on my return at about five o'clock had been informed by the executive officer that telegraphic information had been received that a hurricane was coming rapidly, that the wind was already beginning to rise, and that he had ordered steam in all boilers and taken other measures.

The wind increased very rapidly, and by eight o'clock it was raining heavily, and a tremendous gale was blowing. As there were a number of ships in the harbor, quite close together, and as I knew that the direction of the wind would change rapidly as the center of the storm approached, and that we should have very little distance between our stern and a shoal when the wind got to the southeast point, I kept men at the engine telegraphs, ready to signal orders to the engine-rooms below. But as I appreciated the danger of using the main engines when lying at anchor in a gale, though it sometimes has to be done, I was naturally anxious.

I stood on the bridge till daylight, watching the storm, noting how the wind got higher, the rain denser, the thunder louder, and the lightning more vivid, when suddenly everything seemed to come to a climax with a tremendous peal of thunder, an intense flash of lightning, and a blow on top of my head that threw me down on my hands and knees on the bridge. I did not lose consciousness, and I soon got to my feet and to a realization of what had happened. Almost exactly on the stroke of two bells, or one o'clock, when the wind rose to its highest shriek, a little awning over our heads, which had been forgotten, was blown away, and a short beam of wood about six feet long had been broken from its fastenings, and thrown down on my head.

The hurricane slowly subsided after one o'clock, as its center passed away from us, and by eight o'clock the next morning the weather was beautiful in every way; the wind still fresh, but rapidly decreasing in force, as the

center of the cyclone speeded farther and farther away. The authorities in Havana declared later that this was one of the most violent hurricanes that had ever passed over the city, though, like all violent hurricanes, it had been brief. They could not tell what the velocity of the wind was, because all the instruments for measuring the wind had blown away. Great damage had been done. Nearly one third of the trees had been wholly or partly destroyed; lightning-rods had been bent at right angles, a thing I had never seen before and have never since. All over Havana the wind broke windows and forced rain into shops and dwelling-houses, and did tremendous damage to furniture and upholstery. It was said that everybody who owned anything lost something that night.

In the early part of October the situation in Cuba became adjusted to the satisfaction of the United States, mainly by the clear head and purpose of President Roosevelt, who acted through Mr. Taft, whom he had made temporary governor-general. The *Minneapolis* was then ordered to Philadelphia to go out of commission; and I was ordered to take command of the monitor *Arkansas*, then at anchor in the Severn River, off the Naval Academy, at Annapolis.

CHAPTER XXVII

COMMANDING A MONITOR

THE change from the *Minneapolis* to the *Arkansas* was great, because the difference between the two vessels was radical. The *Minneapolis* was a long, narrow, deep, fast, lightly built cruiser; the *Arkansas* was a short, broad, shallow, slow, heavily armored coast-defence monitor, sometimes irreverently called a "flat-iron." As my promotion would be due in about eight months, I foresaw that I should spend the winter and spring in Annapolis taking the midshipmen out for short trips in Chesapeake Bay, and that the *Arkansas* would be one of the ships in the practice squadron the following summer.

Monitors have always been hard to handle, and monitors like the *Arkansas* were specially so, because they had inturning propellers, a joint invention of engineers and the devil, which is no longer allowed to exist and vex the souls of naval officers. Naturally, I was a little anxious on my first trip, and especially at the end of the trip, when I was steaming up to the buoy to which we were to make fast. There was no danger to be apprehended, but there was a fine chance of doing a clumsy and unseaman-like piece of work. But I steamed right up to the buoy and made fast to it as perfectly as anybody could have done. Naturally, I patted myself on the back and said to myself, "These things are easy enough to do if you only know how." I subsequently found that I should not have complimented my skill, but should have thanked my luck; because I was never able to do it so well again, even after I had had a good deal of practice. Human beings are much the same: we

attribute our successes to our skill, and our failures to our luck.

The *Arkansas* stayed at Annapolis until the following June, spending the coldest months of the winter alongside of the dock at the Naval Academy. We stayed out in the stream at anchor until it became dangerous to stay there any longer, on account of the difficulty of communicating with the shore by reason of the ice. The incident that finally decided that it was time to move in was rather curious. A thin film of ice was on the water, and when the steam launch returned from an early trip ashore, it was found that this film of ice had acted like a knife to the steam launch, and cut a score which was nearly half an inch deep and about an eighth of an inch wide half the distance from the bow to the stern.

The following winter was extremely pleasant in many ways, but exceedingly dull from a professional point of view. I had very little to do personally, and so I decided to write another essay in competition for the prize and to call my essay "The Naval Profession."

My idea was to point out that the navy (and also the army) was not merely an organization like political business or social organizations; but that it was an organization more like the Roman Catholic Church, because its members were members not only of an organization, but also of a profession; and that that profession was as distinctly a profession as was that of medicine, law, or the church. It followed from this that the activities of the navy must be directed according to the principles of the profession, if they were to be directed aright; and that they must be directed aright, if the navy was to do what it was paid to do by the people.

This essay, like the previous essay, led up to the necessity for a general staff, and pointed out the dangerous absurdities of the system by which the navy was then administered. One of the paragraphs was as follows:

The naval profession now covers a very wide field in both its military and its engineering phases; and this field is increasing so rapidly that it is impossible for any one officer to manage it. And yet the Secretary is expected not only to master it, but to make decisions on the most difficult questions immediately after he takes his seat. A civilian with the natural genius of Napoleon could not do this wisely; unless he had counsel which was complete and correct, and so authoritative as to be a warrant for acting on it.

It was then pointed out that a general staff was the only kind of body that would be competent to give such counsel.

But while the main purpose of my essay was to point out the absolute necessity for having a general staff which should direct the navy as a whole to the fulfilment of its purpose, almost equal stress was laid on the ultra-conservatism of the navy, especially in the matter of mechanism. Many instances of excessive slowness in adopting good ideas were mentioned, some of which were drawn from my own experience. One of the important divisions of the paper was headed by the words "Necessity for Keeping Mechanism up to Date." After discussing this question for ten pages, the next division was reached, which was headed "Proposed Remedy." At the beginning of this division was the sentence, "The remedy is easy to find, because it has been found already by the large industrial concerns." After a few sentences devoted to explaining this, the essay continued:

"The remedy found by the great industrial concern is simply that of recognizing affirmatively the necessity of having up to date contrivances, and of establishing an experimental department, whose business is not only to improve on old appliances and invent new ones, but to examine all schemes submitted by outside inventors, and test such as seem to be worthy of testing."

After discussing this, and pointing out how the experimentalists in an industrial concern correspond to the

readers in a publishing house, the next paragraph followed:

But how could such a scheme be adapted to the navy? It could be, by recognizing affirmatively the value of keeping up with the times and by recognizing, further, that this, like many other necessary things, is hard to do, and that something must be sacrificed, to do it. The experimental departments of the industrial concerns cost a great deal of money, and complicate the organization, and take away the services of the best workmen; but nevertheless, they are kept up, and they are rising in importance from year to year. So, with the navy, if we start what would correspond to an experimental department, we must prepare to spend a great deal of time, money and brain work on it, and expect to find it a bother in many ways.

It will be seen that this experimental department was substantially the same thing, or fulfilled the same functions, as the Invention and Experiment Board which I suggested to the secretary of the navy in 1915.

Another part of the paper was devoted to pointing out a fact that was not realized then, and which I amplified later in other essays, that naval power, like military power, is essentially mechanical, that ships can carry weapons and engines much more powerful than soldiers can, and that navies can therefore exert much more destructive power than armies can. One of the divisions of the paper was headed "Battleships More Powerful than Armies." One of the sentences in this division read:

It is well to note that the sole reason for having an organized army instead of an undisciplined horde of men, is that an army organized, drilled, and equipped is, *because* it is organized, drilled, and equipped, a machine possessing a vast amount of energy which can be directed to a definite object, better than an undisciplined horde of men can; and it may be further pointed out that the reasoning above proves that our projected battleship will be a machine of a higher order, possessing in her gun fire a greater amount of concentratable energy than an army of 123,000 men.

This essay got the third prize, the second honorable mention. In my humble opinion this essay was as good as my previous one: I think it was better from the point of view of originality, but inferior in its construction. Its principal fault was in bringing in a number of matters that were not pertinent to the essay. This not only made the essay unduly long, but it occasioned a lack of unity and directness. There were two distinct essays instead of one. If the essay had been divided into two essays, one called "The Naval Profession" and the other called "Naval Strategy," both essays would have been better than the one actually sent in.

Shortly after I had assumed command of the *Arkansas* I wrote to the Bureau of Ordnance requesting permission to secure my turret range-finder to the top of the turret of the *Arkansas*, in order that I might observe its performance under practical conditions, and make it a practical instrument if possible. This request was granted and when the *Arkansas* went into dry-dock at Norfolk in the early part of April, I got the instrument in perfect adjustment. I then wrote to the bureau stating this fact, saying that I would like to have the permanence of adjustment of the range-finder tested officially, and requesting an allowance of five twelve-inch shots to be fired from one of the guns of the turret for this purpose. The bureau granted my request, and sent Lieutenant-Commander G. W. Williams to make the test.

The test was held under his direction. After stating certain details, Mr. Williams wrote as follows as the third paragraph of his report:

During the firing, the Barr and Stroud Range Finder was dismounted and removed from the top of the turret. The distance of the light-house on shore was measured after each shot by the turret range finder; and after the firing was completed, by both range finders. The maximum difference of readings for the turret range finder was 400 yards, varying between 6400 and 6000. The distance by Barr and Stroud Range Finder was 6200 yards. After completion of these tests, simultaneous observations with



Photo Brown Bros

U. S. S. IRMALANS
Renamed O'zark

the two range finders were taken on the ships of the Atlantic Fleet which was standing in to an anchorage in Hampton Roads. The ranges observed were from 7,000 to 12,000 yards, and the two range finders were in agreement within the limits of personal error.

I am of the opinion that a range finder constructed on this principle is accurate, and that its accuracy will not be materially affected by the shock of discharge of a gun of the turret on which it is mounted.

In the sixth paragraph Mr. Williams wrote, "In regard to the usefulness of a range finder mounted on top of a turret, I have grave doubts. The proposition to control the fire of a turret from the turret itself runs counter to the adopted policy of central ship fire control," etc.

His last paragraph read, "I therefore recommend that the turret range-finder be not adopted at present."

Concerning this report, I wrote to the bureau on May 13, 1907, protesting against the report, and pointing out that my turret range-finder was not intended to affect the policy of central ship fire control in the slightest, but merely to afford a more accurate and safe range-finding instrument than was then used. I pointed out the extreme importance of having a correct range-finder and a correct system of range-finding, and said this importance would "increase also with the excitement of battle." I pointed out the probability of the fire-control stations being directly attacked, and reminded the bureau that at the Battle of Chemulpo all the men in the fore- and the main-tops of the *Variag* had been either killed or wounded. I pointed out the extreme value of being able to continue to fight as long as possible, and the aid which a protected range-finder would give toward the close of a battle, when unprotected stations had been destroyed.

My letter had no effect, however; at least I never received an answer to it.

For several years all our new battle-ships have been fitted with turret range finders.

The midshipmen's practice cruise that summer was

carried out in four ships, the *Olympia*, *Arkansas*, *Florida*, and *Nevada*, the *Olympia* being Dewey's old flag-ship, and the other vessels being monitors.

The cruise was extremely pleasant, but only two incidents stand out in my memory. One incident was a trial of my method for finding a ship's position in a fog, when the sun or a star can be seen, while the horizon cannot be seen; the other was our visit to Bath, Maine.

A ship's position at sea is ascertained by making certain computations based on the height of the sun or heavenly body above a horizontal line. In the ordinary practice of navigation, the angle is measured between the heavenly body and the horizon, the horizon being assumed to be in a horizontal direction from the observer; and a correction is afterward applied, based on the height of the observer above the water, to correct for the error due to this assumption. Now, it often happens that the sun or heavenly body can be seen with perfect clearness, but the horizon cannot be seen. As I have mentioned before, I had made a great many attempts to devise an instrument, which would remain horizontal at sea, to be used in place of a horizon; but I had never succeeded. It had occurred to me, however, sometime shortly after 1900, that if an observer would measure the distance of another ship and simultaneously measure the altitude of the sun or heavenly body above that other ship, the angle below the horizontal of that ship's water-line would be just as well known as the angle of the horizon below the horizontal, and could be as effectively employed. For some reason I had never tested my scheme in practice; but before our cruise began, I told Lieutenant-Commander Yates Stirling, who was both executive officer and navigator, to try it on the first opportunity.

One morning at sea Stirling reported to me that he had tried the method the night before, measuring the height of the north star above the white truck-light of the *Florida* and that, when he worked out the sight, he

saw it was a perfect success. We anchored at Bath shortly afterward, and I immediately started in with a series of observations in Bath Harbor, which were perfectly successful, and in which Midshipman Hunsacker was my assistant.

I described these observations in full in an article in the Naval Institute shortly afterward, the name of the article being, "Navigating without Horizon." I have used the method many times since, and other officers have done so also.

Our stay at Bath was very pleasant. On one occasion the citizens gave a ball to the officers and midshipmen which I shall always remember. The ball-room was elaborately decorated with flags of all kinds, and was very large and high. I have often wondered since what kind of room it could have been, because I could not see any windows either at the sides or in the top. The entrance was draped with flags, and was rather long and narrow; so that there was no chance for any ventilation whatever that I could observe. The dancing started about nine o'clock, and kept up till three, and as I danced every dance, and as the room was crowded, and as there was no air whatever in that ball-room after the ball was finished that had not been there before the ball began, I was somewhat tired when I got back on board ship.

The next day there was a water carnival given by the city, in which the practice squadron was asked to take part. We had known about this for several days, and some of the midshipmen and enlisted men had asked permission to take our sailing-launch, which was a large, open old-fashioned boat, rig it up to represent a pirate, and enter it in the carnival. Of course I was very glad to give permission, and when the executive officer reported to me that the pirate ship was all ready, and was just sailing off from the beach, where the crew had been making some changes in her, I went on the quarter-deck to see her. There she was, coming toward the *Arkansas* under full sail. She was brig-rigged, and had a black

flag at the masthead, with a skull and cross bones on it. On each side she had five make-believe guns, and I could see that the crew were dressed up to look very fierce. As the brig went under the stern of the *Arkansas*, the pirates rose and brandished their swords, and made some savage gestures, and looked very terrible indeed. Imagine my feelings to see the name painted on the stern in large letters, "Bradley A. Fiske."

After sailing around the four ships of the squadron, the pirate admiral visited each ship in succession, and was received with appropriate honors. During the evening the pirate ship took part in the parade and received the prize. The following day the crew took part in the shore parade, which was reviewed by Governor Cobb. As they passed the reviewing stand, the pirates left the parade, and reported in person to the Governor, and offered their services in case of war. The governor accepted the offer, and invited them to take seats on the grand stand.

The *Arkansas* went from Bath to New London, Connecticut, and there I received orders to proceed to Washington for examination for promotion to the grade of captain. I was of course somewhat fearful about my physical examination, on account of my heart disease; but the doctors told me that my heart was right in every way, and that I was remarkably healthy for a man of fifty-two, though I was greatly underweight.

It was now thirty-two years and three months since my graduation. Thirty men had stood up together on graduation day, but of these only four now were left on the active list, and only four became captains, Peters, Fiske, Hutchins, and Bowyer.

After my examination, I returned to the *Arkansas* at New London. The cruise was nearly over now, and in a few days we started for Hampton Roads. From Hampton Roads we went to the Washington Navy-Yard to give the midshipmen an opportunity to see guns and gun-carriages in course of manufacture. On going up to

the navy-yard dock, I saw it would be difficult to make a good landing, because we were going with the tide; but as the tide was not strong, I thought I would try to go alongside without turning around. Just as I got nearly where I wanted to go, however, some eddy got the stern and threw it out. That hint was sufficient for me, and so I changed my plan and went alongside the dock, heading out. I was able to accomplish this quite smoothly, for which I was glad; because there were a number of naval officers on the dock looking at us. After we had made fast, some of them came on board; and one of them, a commander, said to me:

“Jim, that was one of the best pieces of ship-handling I’ve ever seen.”

“Well, it really was n’t,” I answered. “It was really a bungle; I was trying to do something else.”

CHAPTER XXVIII

TURBET RANGE-FINDER, HORIZOMETER, COURAGE, AND PRUDENCE

IT was now the latter part of August. I was detached in a few days and placed on waiting orders. I went to New York, and on my way passed through Washington, where I went to arrange what duty I should be ordered to. I was offered the command of the battle-ship *Illinois*, which was to take part in the cruise around the world, in the fleet under Rear-Admiral Evans. Of course I accepted it with pleasure. As the fleet was not to start for some months, I was given charge of the recruiting offices in New York. This duty was not much to my liking, but as it was to continue for only a short time, I accepted the duty, if not with pleasure, at least with philosophy.

In the early part of October my wife was taken desperately ill. After about a month the attending physician told me that he thought a surgical operation was necessary. I called in a prominent surgeon of New York, and he told me, after an examination, that she could not stand the operation, and that, furthermore, it was too late. He told me, however, that he was not sure that the disease was as it had been diagnosed, and that she might possibly get well without an operation; in which case her recovery would be long and tedious.

This put me in a painful position not only personally, but professionally. To give up the command of a battle-ship just as she was to start on an extended cruise would be almost professional suicide, and yet I could not leave my wife in her dangerous condition. So I wrote a personal letter, explaining matters to Admiral Brown-

son, who was chief of the Bureau of Navigation, and one of the most strict and officer-like men in the navy, and therefore, one of the fairest and most high-minded. I got back a letter from Brownson, saying that if I would write an official letter, requesting that my name be taken off of the list of the officers of the *Illinois*, my request would be granted. I made the request, and it was granted. I have heard since that most officers thought I had professionally killed myself, or at least shut the door to any further career in the navy except of a very obscure kind.

During the autumn and winter my wife was very ill indeed; nevertheless, she gradually improved. My duty as recruiting officer had the advantage that it gave me considerable leisure in which to look out for my wife, and as she had a professional nurse, it enabled me also to develop my turret range-finder and my horizometer. Both of these instruments I developed at my own expense at the works of the Western Electric Company on West Street.

I had my turret range-finder removed from the top of the turret of the *Arkansas*, and placed in its old position on top of the roof of the Western Electric Company's building. There were a number of prominent objects in sight, and so in a short time I was able to get the instrument to working well and giving accurate readings.

Then I wrote a careful letter to the Bureau of Ordnance, asking for a retrial of my turret range-finder. I pointed out that the only objection which the Bureau of Ordnance had previously expressed regarding the turret range-finder was in regard to its ability to withstand the shock of discharge of the guns in a turret, and that the tests on board the *Arkansas* in April had conclusively proved that it could withstand such a shock.

The bureau appointed a board, of which Captain Henry Morell was the head. This board made many measurements, using in comparison with it the ordinary fifty-four-inch Barr & Stroud range-finder, and also a nine-

foot Barr & Stroud range-finder that belonged on board the *Connecticut*, and which was operated during these trials by Lieutenant Smith, who was the officer who used it in the *Connecticut*. The board made a report, dated November 13, 1907.

The tests of the instrument were made in measuring known distances ranging from 1100 yards to 12,000 yards, and they were compared with the measurements made by the two Barr & Stroud range-finders. In its report the board found fault with many of the mechanical arrangements of my range-finder, although I had explained to them that those mechanical arrangements were due merely to the necessity at that time of putting the range-finder on a platform, that the range-finder itself was intended to be secured inside of a turret, and that I was merely trying to show that a range-finder could be made as long as the diameter of the turret and be accurate, and that I had already proved that it could stand the shock of discharge of the guns. The second paragraph of the board's conclusion read as follows:

In regard to accuracy, when both are in adjustment, the Board is of the opinion that with equal magnification, the accuracy of the Fiske Turret Range Finder and the 4'6" Base Barr & Stroud instrument, to a range of 5000 yards, would be approximately equal; and that with a Barr & Stroud of 9' base, the observations would be approximately of equal accuracy to about eight or nine thousand yards. Beyond this range, it is believed that the 15' base of the Fiske Turret Range Finder would give more accurate readings.

As the report of the board was distinctly unfavorable, although it did not deal with the subject of turret range-finders itself, but devoted itself entirely to the actual device which I had submitted, I wrote a letter to the bureau, in which I pointed out that my invention of a turret range-finder was not limited to any kind of mechanism, but rather to the manner of combining a range-finder and a turret, which I had set forth in my patent specifica-

tion, and I asked the bureau to call the attention of the board to certain items in their report which I specified. The bureau submitted my letter to the board, and the board made certain comments in reply under date of January 23, 1908. The gist of the board's reply was that the board adhered to its original report.

About the first of April I received orders to report for duty at the Philadelphia Navy-yard, as captain of the yard, a position next to that of commandant. These orders were very distressing, as my wife was still extremely ill; but of course they were perfectly proper, and of course I obeyed them without remonstrance.

Shortly after my arrival at the Philadelphia Navy-yard I had my turret range-finder sent there, and I installed it in position at the end of one of the wharfs, from which a view of many objects could be had. After getting the range-finder ready, I wrote a letter to the bureau, dated May 12, 1908, in which I pointed out that the previous board had not mentioned one good feature of my turret range-finder until certain questions in my protest had brought out those features in the board's reply.

A board was duly ordered, and in due time made its report, which was dated June 19, 1908. This board, like the others, found fault with the details of the instrument presented; but unlike the previous report, did take up the subject of a turret range-finder *per se*.

The board did not agree at all with my proposition that a turret range-finder was a desirable thing to have. The eighth paragraph read as follows:

The board has given careful consideration to the proposed method of Captain Fiske of installing a range finder protected by armor upon the turret. Such a method is found to derive its most useful application only from the adoption of the system, which to the board appears radically wrong, of individual fire control for each turret, as against centralized fire control for the entire ship. And while, as an adjunct to the present fire control system — or more accurately speaking, as a reserve to

be used upon the disabling of that system — it would have an undoubted value, the board deems that if the weight necessary for five or more armored turret range-finder stations were devoted to the protection of the central fire control system, a higher fighting efficiency would result; and it is considered that with an armored fire control system, the purposes of individual control as a reserve would be fulfilled by supplying to each turret a small range-finder, such as the stadimeter or some other type of portable instrument.

In conclusion the board recommended that my instrument should not be tried on a ship in commission for further test.

The reports of the various boards on the turret range-finder are interesting now in the light of the fact that all the battle-ships which have been authorized since 1910 have been fitted with turret range-finders that come specifically within the claims granted to me by the United States Patent office, and *published in my patent*, dated November 20, 1900.

Before I had gone to the *Minneapolis* I had invented an instrument that I called a "horizometer," because it was intended at first to be both an improvement on the stadimeter and an instrument for measuring distances of objects at sea, the base of which was one's own height above the sea; so that the range was measured by measuring the angle of the distant object below the horizontal. It was a very pretty instrument indeed, and it worked very well when the horizon could be clearly seen. I took it with me when I went to the *Minneapolis*, and tried it a great many times at sea and in port, sometimes using it on the bridge and sometimes in the main-top. A board of officers tried it, and made an official report while we were in Madeira. The report of the board was favorable in the main, but pointed out that the instrument was too small, in their opinion, to get the accuracy required. I took the instrument with me when I went to the *Arkansas*, and after many trials with it I concluded that the horizon could so seldom be seen with

sufficient clearness that I would have to give up one of my ideas in connection with it (that of measuring an object by measuring its angular distance below the horizontal) and confine myself to using it as an improvement on the stadimeter. I concluded, however, to retain the name horizometer simply as a matter of convenience.

By the time I left the *Arkansas*, however, I realized that the instrument was too small, especially since the advancing improvement in naval gunnery called for greater accuracy than before, and for the measurement of longer distances. So I constructed another instrument, and submitted that for trial. This instrument was tried by the same board that tried my turret range-finder. The report of this board was far from favorable.

During the years that followed the target practice in the spring of 1903, which tested the system of gunnery training devised by Captain Sir Percy Scott, and introduced into the United States Navy by Sims, the gunnery of the navy has made a great advance. As a naval officer and as the inventor of both the telescope sight and of spotting, I was of course much pleased, and the fact that all the credit was given to Sims, and none of it to me, did not disturb me in the least. It seemed to me, however, that the gunnery would be even better if less dependence were placed on spotting and more on the use of the range-finder. It seemed to me that spotting was essentially too crude and inexact a method to give sufficiently good results for so precise a science as that of gunnery, and that it would be better to use the range-finder as the basis of the gunnery practice, and use spotting simply to correct the indications of the range-finder. As I had talked and written a good deal on the subject, and as it seemed to me that the adoration of spotting was like the adoration of the British Navy for mere dash and courage, I thought I would try an attack on both from a new direction. So I wrote an article, which was printed in the *Naval Institute* in March, 1908, called

"Courage and Prudence," in which I pointed out the great value of courage in war, but also the fact that the greatest disasters in history had occurred because of lack of proper prudence. I led up from this to the advocacy of not only defensive methods, but also defensive construction, and pointed out that the greatest naval victory in history was that of the *Monitor* over the *Merrimac*, and that *the Monitor's superiority over the Merrimac lay almost wholly in her defensive qualities.*

Among other measures, I suggested the idea of giving the captain better protection inside the conning-tower by abandoning the slits in the sides and giving him a small periscope, which would project through the roof. At the present day the captain does have such a periscope, and while slits have not been altogether abandoned, there is a good deal of evidence that they will be.

Another plan that I suggested, which was wholly new, was to have a "plotter" seated at a table, in a room below the water-line, and to place in front of him a plotting-board "much like a plane-table," on which he would plot at intervals points representing the distance and direction of the target, according to information received from the range-finder-observers on deck. One sentence read:

"Let the plotter continually connect the points established; and it is clear that the line resulting will represent not the course and speed of the enemy ship, but its course and speed relative to our ship."

A following sentence read:

"As everybody would be behind armor, such work would not seem at all liable to error, due to excitement; especially as no mental arithmetic would have to be carried on."

This suggestion seemed to attract no attention at the time, but it was adopted *in toto* by the Navy Department fire-control board in 1910. It is the basis of our fire-control system now, though several very ingenious instruments have been invented and developed to carry

it out. Among these is the "Course Indicator," which is a slight (very slight) modification of my horizometer.

In June, 1908, I published in the *Naval Institute* an article called "Spotting and Range-Finding," in which I pointed out what seemed to me the folly of basing our target practice and gunnery wholly on the spotting done by unprotected observers aloft, and in which I wrote in one sentence, "The use of protected range finders, supplemented during the opening stages of the battle by an observer aloft, is the only practical way of securing accurate sight bar ranges in battle." The article was illustrated with certain diagrams intended to point out that, while spotting was a necessary adjunct to fire control in battle, it was inherently inaccurate, and should be used merely to rectify errors, and that the range-finder must be the real basis. In December, 1908, I published another article on the same subject, called, "A Curious Fact About Spotting," which was intended merely to reinforce the previous article.

In March, 1908, I suddenly received orders to report the following day to the chief of the Bureau of Navigation, and be prepared to testify before the Senate Naval Committee. I knew that the committee was investigating certain matters connected with the Navy Department, especially the armor attached to ships; but I could not see why I should be sent for, as it was not a subject to which I had given any attention. When I reported to the chief of the bureau, I was told that I probably would be before the committee several days, and that I was to be questioned in regard to several matters. I reported at the committee-room about noon. In the interim I was told by several officers that I would probably be before the committee several days, and advised to "give 'em h——."

By the time I reached the committee-room I was in a complete state of bewilderment; but I had come to one conclusion, which was fairly clear, and that was that somebody was sending me there for some purpose of

which I was ignorant, and that I had better be careful as to what I said. When I appeared before the committee, the man who did most of the questioning was Senator Tillman. Most of his questions were along the lines of naval construction, and to most of them I answered, "I don't know." I could see that something was going wrong, and that he was getting irritated. Finally he said:

"Do you mean to tell me that you are a captain in the navy and don't know how high armor ought to be put on a ship?"

"Yes, Senator." This seemed to irritate him still more, especially as a titter went up from some of the other members of the committee; so he said:

"He does n't know anything about naval things, anyhow; he 's never been in a battle."

"You forget the Battle of Manila, Senator. I was there," I objected.

"Oh, that was not a battle; it was a murder on our side," exclaimed Mr. Tillman.

"We incurred very little risk in that engagement," interposed Senator Hale.

"We think that now as we look back at the battle," said I; "we did n't think so before the engagement."

There was a pause in the proceedings then, and Senator Hale, who was the presiding member, asked me to step outside, saying that he would call me later.

I waited outside about an hour, and then sent in word that I should like to see Senator Hale. When he came out, I told him that my wife was very ill in New York, and as it was Saturday afternoon, I should like to go back to New York and appear again Monday morning in case the committee did not want me any more that afternoon. Senator Hale went into the committee-room, and soon came out again, saying that I might go to New York, and that the committee would let me know when they wanted me again.

So I went to New York, expecting to be called back

very soon; because I had been before the committee hardly ten minutes and I had been told that I would be before the committee several days. The summons to appear before the committee has not yet come.

At the Philadelphia Navy-Yard I occupied the large house which the commandants ordinarily had occupied. The commandant at this time, however, preferred a smaller house on the river-front, and I found myself lord and master of a large, fine residence, which I occupied entirely alone, with two colored servants. The house was at the extreme northern end of the navy-yard, near the main gate, and on the brink of a large swamp. One night I was aroused from my slumbers by a heartrending sound, which I did not recognize at first, but which I gradually recognized, as my faculties returned to me, as that of a cow, and it seemed to be in great distress. The noise continued, and became so pitiful that I got out of bed and went down to the telephone, which was in the main hall, called up the sergeant of the guard, on duty on the gate near by, and told him to send a marine to me immediately. In less than a minute a marine appeared before me. He was out of breath from running, but he saluted with precision, and assumed the attitude of attention. I said to him:

"I've been wakened by that noise out there, and I wish you would tell the sergeant to see what is the cause of it. It sounds to me as if some cow had got caught in the swamp." The man, who was a private of marines, gazed at me with a most peculiar expression for a few seconds. Then an irrepressible grin spread over his face as he saluted and said:

"Sir, that is n't a cow; that 's a bull-frog."

As the spring wore on, my wife became gradually better, and I realized that the time was coming when I must leave her; but she was getting better so slowly that I realized also that I should have to leave her before she became completely well. So in the early part of June I went to Washington and told Rear-Admiral Pillsbury,

who was then Chief of the Bureau of Navigation, that my wife's health was now such that I was able to leave her, but that I should like to be given command of a ship near home. I said, however, that if such a command could not be given me, I should like to command one of the battle-ships of the fleet under Admiral Evans, which had started on its cruise around the world, and was then in the Pacific on the way to San Francisco. Pillsbury answered that there were to be a couple of vacancies in the commands in that fleet, but that they had already been provided for; and that the only chance for me was the armored cruiser *Tennessee*, the captain of which, "Tommy Howard," was to be sent to command the *Ohio*. Of course I accepted the command of the *Tennessee*.

In a few days I received orders detaching me from the Philadelphia Navy-Yard, and ordering me to proceed to San Francisco and take command of the *Tennessee* on July 7.

My wife was now able to be moved, and on the thirtieth of June, I took her down to the Marlborough-Blenheim Hotel at Atlantic City, with a professional nurse and our daughter. The next morning I bade her good-by and left her.

If any man thinks that it is pleasant to leave one's wife ill in bed, while he starts on a two years' cruise, on a station three thousand miles away, let him try it.

CHAPTER XXIX

THE CAPTAIN'S CRUISE

I LEFT New York in the afternoon of July 1, 1908, and made the same trip that I had made in December, 1896. I reached San Francisco in the evening of July 5, and went to one of the most perfect hotels that I have ever known, the St. Francis. The *Tennessee* did not arrive until the following day. I reported on board to Rear-Admiral Sebree at two o'clock. In less than an hour from the time of my going on board, I was on the bridge in uniform, piloting the ship to an anchorage farther up the bay, where she was to take on coal.

The *Tennessee*, while not a battle-ship in the technical sense, because her armor was not so thick as a battle-ship's, and because she had ten-inch guns instead of twelve-inch guns, was a captain's command in every sense. She was harder to handle than a battle-ship, because of her greater length, and she carried more men than most of them, because she carried a greater number of guns and had more powerful engines. She was the flag-ship of the second division of the Pacific fleet, and carried the flag of Rear-Admiral Uriel Sebree. The fleet was composed of two divisions of armored cruisers, and was under the command of Rear-Admiral Swinburne, who commanded the first division as well as the fleet itself.

After coaling, we proceeded to the navy-yard at Bremerton, in the State of Washington. Bremerton is near Seattle, on Puget Sound, and is the site of a large navy-yard, which was established shortly after our Spanish War.

I liked the *Tennessee* tremendously, but I saw that

my work was to be of an engrossing character. She had a splendid crew, which had been put into an excellent state of discipline and good humor by Captain Howard, whose strong common sense and unselfish character, combined with natural ability, has enabled him to make a success of every position he has occupied in the navy. Our trip north and through the magnificent Strait of San Juan de Fuca, was exhilarating; but I confess that I had a very cold feeling in the region of the stomach when I saw what a sharp turn I should have to make with the *Tennessee*, and in what a narrow channel, when we should reach the bend near the navy-yard. Fortunately, I had become so thoroughly frightened by the time I reached the dreaded spot that I was able to make the turn perfectly. I had to make that turn several times afterward during the course of the cruise, but I never did it better than I did the first time. This may seem strange when one realizes that I was handling a mass weighing 14,000 tons, going through the water at a speed of sixteen knots, that I had never handled such a vessel before, and had never been within five hundred miles of the spot. Naturally, on subsequent occasions, I had much better knowledge of the ship, but, then, on those subsequent occasions my faculties were less stimulated than on the first occasion. Men differ in these matters very much. In my own case I have always noticed that I have played the first game of billiards or ten-pins or cards better than I have played the succeeding games.

We found Bremerton a pleasant place in many ways. The scenery was magnificent and the climate fine, much warmer than that of San Francisco, although Bremerton is six hundred miles farther north. After a stay of about two months, during which we were subjected to many repairs and alterations, mostly on the fire-control system, we went to San Francisco, where all the Pacific fleet now gathered.

The fleet was to go to Honolulu, then to Samoa, then back to Honolulu, and then to Mexico. We were to tow

eight destroyers to Samoa, as a matter of practice and experiment, each ship towing one destroyer.

We started for Honolulu one bright afternoon, and had a most successful trip, one that has become historical in the navy for the reason that no such large scale towing of destroyers had ever been attempted before. We reached Honolulu one beautiful morning, and let go our destroyers, which remained outside until the big ships had gotten alongside their docks. Local pilots came on board, and advised the captain of each ship as how best to manœuver in the narrow waters of the harbor. After a short stay in a place which was still beautiful on shore, but of which the beautiful water-front and harbor had been utterly destroyed by civilization, we steamed our ships out to sea, took our destroyers in tow again, and started for the Samoan Islands.

A rather pleasant, but warm, trip took us to Apia, the principal port of that part of the Samoan Islands that belonged to Germany. We accomplished with perfect success our towing trip, which aggregated somewhat over five thousand sea miles, divided into two nearly equal parts. Occasionally the towing-line carried away between a ship and her destroyer, but it was repaired in a short time and it did not happen to the *Tennessee*. The arrival at Apia of our eight ships, each towing a destroyer, and the fact that the trip had been accomplished at an average speed of about nine and a half knots, showed the practicability of such an attempt under the conditions which prevailed. The conditions which prevailed, however, had been extremely good, and the facts that destroyers are now about twice the size of those we towed, that the conditions which prevailed can be counted on in tropical climates only, and that no such undertaking has been made since, indicate that, after all, our trip had little value for the future. We had the idea in the fleet at that time that the real purpose of the trip was to get a considerable fighting force into the neighborhood of Japan.

Our stay at Apia was brief, but interesting. The scenery was beautiful in every way, and if it had not been for the extreme warmth and humidity of the climate, our stay would have been delightful. Some of us went to the home of Robert Louis Stevenson, in which he spent his latter days, and where he died. Most of us supposed that he had died of consumption; but we were informed that he died very suddenly one day from an attack of apoplexy while in the act of preparing a salad.

The commander-in-chief had gone with the first division to Pango-Pango, the principal port of that part of the Samoan Islands that belonged to the United States, while we of the second division had gone to Apia. On our way from Apia to Pango-Pango to join the commander-in-chief, we received a wireless message from him, directing Admiral Sebree to anchor three of his ships in the harbor, but to direct the *Tennessee* to go alongside the dock. When I looked at the chart and saw how small the harbor was, and that I should have to make a sharp turn as soon as I entered the harbor, and go alongside a small dock, I thought that the time when I must make expiation for all my sins had come at last. I saw visions of the *Tennessee* going among the ships in the small harbor in the same way that a bowling-ball goes among a group of ten-pins, and then I saw a dock being crumpled up into small pieces, and the captain of the *Tennessee* being court-martialed.

But, as has always happened to me when I have been thoroughly frightened, no mishap occurred. The *Tennessee* went alongside that dock with as much apparent ease and quiet, and lack of backing and hauling on ropes, as if she had been a rowboat.

We remained in Pango-Pango for about ten days. My friend and classmate, John F. Parker, now a captain on the retired list, was governor, and he introduced us to the various high chiefs and other people in the best society of the place. Admiral Sebree had been governor there a few years before, and Parker detailed a native soldier to

walk about at his heels as orderly, a procedure which Seabee had followed when he himself was governor.

On the first night we were there Parker invited the admirals and captains of the fleet to a dinner, at which were present Mrs. Parker and the officers stationed at Pango-Pango, with their wives. The governor's house stood on a high and beautiful hill, from which magnificent views could be had over long distances and in all directions when the weather was clear, but which were usually dimmed and shortened by the prevalent mists and rains. The ocean could be seen, except where high parts of the island shut it off, especially "White Face," a high mountain from which the natives thought all storms proceeded.

On the second day a great feast was given to the officers and men. We gathered on a large plain, where roast pigs were being prepared. The ceremony of preparing the roast pigs was most important, and most exciting to the natives; for the reason that they live almost entirely on bananas, yams, and other vegetables, and meat is extremely scarce. Being scarce, it was naturally prized. Roast pig in particular was prized, and deemed the very finest thing to eat that the world afforded.

The officers of the fleet sat together, and near them, but somewhat apart, were the enlisted men, all of us in white. In a large outer circle was an immense concourse of native men, women, and children. Between the outer circle and the inner circle where we sat were the pigs, being roasted under the direction of a principal chief. While the roasting was going on, other chiefs and great men of the tribes made speeches. I asked Parker what these speeches were about; and he told me that for the most part they described the beauty of the sunshine and the hills and the waters, and the power of the gods who control them.

Finally the pigs were done, and portions were served to us on plates as we sat cross-legged on the turf. By this time the crowd had become much excited. Finally, when we had been all served, a signal was given, and there was

a rush of the crowd toward the pigs. There was no fighting or disorder or any unpleasantness whatever; on the contrary, the crowd was extremely good-humored, but they did want roast pig. I have never seen such hunger or such unrestrained exhibitions of passion in a crowd as was shown by that crowd for that pig.

The next afternoon we were given a war-dance. There was a large field, on the side of which were some benches. Admirals and captains were given seats on the front row of benches, and the officers and enlisted men sat on the benches behind. As we were walking up to the benches, some young women were brought up, and each of the captains was introduced to one of them, and told that she would be his companion on the benches. Each of these young women took the right hand of her captain, and then we captains walked along, each of us holding the hand of his partner. I think we all acted our parts as if we were quite accustomed to that sort of thing, except Austin Knight, who was the captain of the *Washington*. Knight was a very dignified man, an extremely proper man in all his deportment and conversation and modes of thought, and probably that was the reason why he looked so silly as he was walking along, holding the hand of that girl.

The war-dance was not a dance in our meaning of the word; it was more like a procession. A number of men, probably more than a hundred, came toward us in gorgeous costumes, brandishing clubs, shouting, and singing but advancing, not at a walk or run, but by executing some curious steps. Meanwhile some women seated on the ground went through a so-called dance also, rising occasionally to their feet. It was noticeable that while they were seated on the ground the movements of their arms and of their bodies above the waist were very graceful; but that as soon as they got on their feet and began to use their legs and feet, they were extremely clumsy.

We found the Samoans just what we had expected them to be, large, good-looking, simple, peaceful, and healthy.

Comparatively few of them spoke English, and few of them showed any sign of the effects of civilization. One of their curious customs was that in every tribe there was a young unmarried woman (called, I think, a *taipoo*) who took the part of hostess of the tribe on occasions of ceremony. She was usually the daughter of a chief, but not always so; and we were told that she was elected by the tribe because of her popularity, good looks, and, above all, good character. After having been elected to this position, she became a sort of ward of the tribe, and the tribe took it on itself to care for her in every way and to select a good husband for her from among the sons of the chiefs of other tribes. It was considered an honor for a man to be deemed worthy to marry a *taipoo*.

The United States naval surgeon on duty there told me that the natives had a great deal of stomachic and intestinal trouble, due to their having to eat so much fruit and vegetable food, in order to get sufficient nourishment; and that he was getting splendid experience in abdominal surgery. "Lo, the poor Indian!"

We expected to find some colliers in Pango-Pango, sent there from Hampton Roads to coal us; but when we got there, there were no colliers, and this alarmed us a little, because there was no coal in Pango-Pango, and we knew we could not get away without coal. The days went by, and still no coal. Meanwhile another steamer did not come in that had been expected before we had arrived, and on board of which was the chaplain of the station, with his wife, and the wife of one of the officers. We heard afterward that the steamer was wrecked on Christmas Island, twelve hundred miles northeast of us. In the days of anxiety that ensued there were many people who deplored the fact that there was not on the island of Pango-Pango any wireless telegraph.

Finally one collier came in. Swinburne coaled the ships of the first division from it, and started for Honolulu with that division and four destroyers, telling Sebree to coal from the other collier and follow. The other col-

lier came in shortly afterward, much to our relief, and we coaled as soon as possible. Finally, one warm afternoon, we extricated our ships from the narrow waters of Pango-Pango Bay, and stood out to sea, and then headed to the north; and we watched the fading from our view of thatched native huts and green fields and waving palms, and the white surf on the beach and the high mountains covered at the tops with clouds, the whole softened and dimmed by a driving tropical rain.

Half-way to Honolulu we were struck by a violent gale, a comparatively rare thing in those parts. This made us uncomfortable in the big ships for a couple of days, but it made the people in the destroyers ten times more uncomfortable. I have never had service in a destroyer myself, and so I have never been able to understand how a living human being can endure being battered and hammered as one is in a destroyer.

When we got to Honolulu, the pilot who was to take the *Tennessee* did not appear. My recollection is that I was told that he had been stricken with leprosy. I was very sorry for any man who was stricken with leprosy; but I was not so sorry for him at that minute as I was for myself when I realized that I should have to take the ship alongside the dock without any guide, counselor, and friend. Fortunately, my attention had been very much on the alert when I had gone alongside the dock before, with the pilot on the bridge, and I was able to get alongside just as well without him. After that I always took the ship alongside of docks without any pilot, and most of the other captains did the same. A few days after that I had to shift the ship to a dock farther up the harbor. This circumstance did not bother me much until the time came to leave, and the pilot did not appear. Rather than wait for him then, I determined to take the ship out without his assistance, and I was able to do so in such a way as to receive the loudly expressed approbation of Admiral Sebree.

We started from Honolulu about the middle of Novem-

ber to go to Magdalena Bay in Lower California, Mexico, for the fleet's annual target-practice. Before going to Samoa, we had received from the department the rules that were to govern the target-practice; and I saw at once that they were most unfair for the *Tennessee* and *Washington*, because we were made to fire at longer distances and at higher speeds than the other armored cruisers. After reading the rules carefully, I saw that they must have been written by some one who did not have a clear understanding of the relations of range and speed to the probability of hitting a target. I pointed this out to Knight, who was interested as much as I in having the *Tennessee* and the *Washington* stand high on the list showing the order of excellence of the ships in target practice; and I suggested to him that he and I write a letter of protest, based on the scientific principles of gunnery. Knight agreed with me that I was correct, but he declined to join in a protest. At first I decided to make a protest myself; but I realized that it would do no good for one man out in Samoa to write a letter of protest to Washington. I then decided to write an article for the *Naval Institute*, and to call it "A Fair Basis for Competition in Battle Practice." This article was published in the *Naval Institute* in December, 1908. It discussed the subject mathematically, proved how utterly unfair and unscientific the rules governing the target-practice were, and made certain recommendations as to what ought to be done in the future. The article was, of course, too late to do any good at the time, but most of its recommendations were carried out the following year.

We arrived at Magdalena Bay in due time, and went through a course of preliminary practice. I think naval officers agree that Magdalena Bay has the best climate of any place in the world. It is warm, but not hot, and it has good weather virtually all the while. Some time before we got to Magdalena Bay, Admiral Swinburne's staff made out the program of drills and exercises which we should follow, and we were able to carry it out without a

single change. I was interested to see that Magdalena Bay corroborated my theory that in places where there is a good climate nobody wishes to live; for there was almost nobody whatever living anywhere near the beautiful and healthful precincts of Magdalena Bay.

In training the officers and crew of the *Tennessee*, aggregating nearly one thousand men, for target practice, I laid great stress on getting the correct range; and I was fortunate in finding two midshipmen, Frank Russell and Augustin Beauregard, who were of the proper material from which to make good range-finder observers. They were both young men of that peculiar nervous organization that makes one a good marksman with the musket. Russell, in particular, became exceedingly expert and exceedingly reliable. This latter quality was due in great measure to his extraordinary ability to retain his presence of mind in all circumstances. If I were asked to mention the man who seems to me to possess the faculty of presence of mind to a greater degree than anybody else I have ever known, I should unhesitatingly reply, "Frank Russell." He is now a lieutenant-commander.

While alongside the dock at the navy yard at Bremer-ton, it had occurred to me that the principal difficulty with the range-finder was the fact that its zero, or initial point, became displaced principally because of a minute bending of the instrument; and that it would be easy to make a correction for this by sighting the range-finder at two vertical lines that were as far apart as the two object-glasses. In the range-finder used then, these object-glasses were fifty-four inches apart; so I had Mr. Russell have a board prepared in which there were two vertical lines exactly 54 inches apart. After this had been prepared, I sent it off to a distance of about five hundred yards, and had Mr. Russell try to correct his range-finder by it. The attempt was an absolute success. Realizing the advantage this would be in our fleet drills and target practice, I called it to the attention of Admiral Sebree, and he had a range-finder corrector made for each ship.

Then I wrote an article for the *Naval Institute*, which appeared in September, 1908, called "To Adjust Range-finders before Battle," in which both the theoretical and practical parts of the plan were described. The text of this article was published by the Navy Department on February 6, 1909, as "Special Order No. 5," and a letter was sent to me from the department expressing its approbation, and stating that a copy of that letter would be placed on my record in the department.

Admiral Swinburne had range-finder correctors made for all the ships of his fleet; and so did the commander-in-chief of the Atlantic fleet on the recommendation of lieutenant-commander (now Captain) Ridley McLean, who was the fleet gunnery-officer. These correctors were found to be of great value, and did a great deal to convince the navy of the practicability of accurate range-finding. They continued in use for only a few years, however, because a better plan was brought forward by range-finder manufacturers, whereby the zero could be corrected by means inside of the range-finder itself.

On the day of day-target-practice I carried out the rules of the practice, of course; but I had Russell make range-finder measurements all the time, and I had a man record his observations. After the practice was over, Russell and I went over the records carefully, and we concluded that the ship would have hit the target oftener than it did if we had used the range-finder indications entirely and disregarded altogether the observations of the spotters.

On the night target practice a target was anchored at some place which was known to the firing ship only approximately, and the firing ship was to advance toward it and try to pick it up with its search-lights. It was necessary to pick up the target at a great distance, because, if a ship began firing at too short a distance, the record which she made would be "penalized"; that is, a certain proportion of it would be subtracted. Advancing toward the target on the night we had to fire, I had Russell at the range-finder, not far above my head, as I stood on the

bridge. Knight was standing on the bridge near me in order to get points which would help him when his ship came to fire on the following night. We were going nineteen knots, and the ship was trembling all over, and the wind was making a great deal of noise, and the foam was being dashed up by our bow. I could see nothing in the darkness ahead except the lights of the *West Virginia*, which was anchored somewhere on our port bow. Finally the target became visible under the rays of the searchlight. Our men were at the guns; everything was ready; everything was at tension. I waited in great excitement for Russell to sing out the range, but not a sound did he make. The minutes passed, and we were getting closer and closer to the target at the rate of nineteen knots an hour. Finally I could stand it no longer, and called up, "What is the range, Russell?" Not a sound in reply. "What is the range, Russell?" Not a sound. Again and again I called, "What is the range?" Finally came the answer, perfectly clear and cool and slow, but giving a range which I realized at once was too short to make it wise for me to fire.

I saw instantly that I must get the ship off the range course, and steam away and come back and try it again.

"Starboard," I ordered.

"Starboard, sir," answered the quartermaster. The ship's bow began slowly to move to the left in the darkness toward the lights of the *West Virginia*, which I saw were closer than I had supposed.

"Do you think she will make it, Quartermaster?"

"I don't know, sir," was the reply.

"Port," I ordered.

"Port," was the answer.

"Back the starboard engine."

"Back the starboard engine, sir."

But our bow continued to swing farther and farther to the left, closer and closer to the direction of the *West Virginia*, while we tore through the water with unabated

speed. I did not know exactly how far away she was; but I saw that if she were as close as she might be, nothing now could prevent the *Tennessee* from striking her fair on the starboard side, and cutting her literally in two. Finally, the *Tennessee* stopped swinging to the left, and then began to swing to the right, and I knew that the danger was past. In half a minute more I had the satisfaction of leaving behind our port beam the lights of a ship carrying nearly a thousand men, some of whom I could hear talking and laughing and singing about the decks. This episode stands out with more painful distinctness than any other in my memory.

After the records of that target practice were made by the Navy Department, the *Tennessee* stood number eight in the list of nearly thirty ships, a most honorable standing considering the fact that we had been unfairly handicapped.

My continued insistence on the use of the range-finder was regarded as an eccentricity, and was a source of considerable innocent merriment among the officers of the ship. On Christmas day the wardroom gave a Christmas dinner, and invited the captain, as wardrooms usually do on Christmas day. Toward the end of the dinner Assistant-Surgeon Kaufman read a "poem," which was the joint work of the two poets of the mess, Dr. Kaufman and Lieutenant Ralston Holmes, Sebree's flag-secretary. The poem was as follows:

"THE CAPTAIN OF THE CRUISER *TENNESSEE*

" The air was full of whizzing shell,
From the enemy on the lee;
In fact, the atmosphere felt like hell
On the bridge of the *Tennessee*.
And the cruiser captain's brow was hot,
And he used words loud and strange,
As he called aloft to the fighting-top
To find out the latest range.

“ Then the cruiser captain’s right-hand man,
 The cruiser’s range-finder lad,
 Said he had the range when the fight began,
 But the fog made his readings bad.
 And the cruiser’s captain thought awhile,
 And he sent for his glass and a log,
 And divided a pint by a cubic mile,
 And measured the range through the fog.”

We left Magdalena Bay about the middle of November and started for the port of Lota, near the southern end of Chile. On the way down we stopped at Panama. The construction of the Panama Canal was about half done, and many of the officers and men took the trip to Colon and back. I was among these, and we found the trip interesting in the highest possible degree. We had never seen civil engineering works of such magnitude, and we had never seen any kind of work carried on with better evidences of foresight and understanding. It did not seem to us as evidencing any special genius, but as evidencing perfectly that splendid efficiency and completeness that is characteristic of military work in general, and was characteristic of the work which Colonel Goethals was doing in particular. The atmosphere was military; everything was clean, precise, orderly, and energetic.

I found Colon enormously changed from the Colon of my previous visits. Instead of disorder, sickness, dirt, and a general air of misery and desperation, there were order, health, cleanliness, and a general air of happiness and hope. To our amazement, we even saw boys playing baseball. We were even able to find a restaurant and get a good, clean lunch.

From Panama we went to Lota, skirting the coast fairly close all the way down, and indulging in numerous tactical drills in the forenoons and afternoons. The *Tennessee*, as flag-ship of the second division, had perhaps the most difficult part in the exercises; so that I was much gratified when the following wireless telegraph message was received at the end of one day’s drills:

For Sebree: Congratulate you on your flagship's good work. When we all get up to her standing, we can make drills shorter.

SWINBURNE.

While in Panama I had had rigged over our stern an automatic device that showed to the ship astern, both by day and night, the exact position of our rudder. This was found to be of great assistance by the ship astern in regulating her own movements. Naturally, I was much pleased with its success, and I devised another arrangement whereby we could automatically show also the speed and direction at which our engines were moving. Before I started on this, however, I wrote an official letter to the department, reporting the success of my rudder indicator, and my letter received the favorable indorsement of both Admiral Sebree and Admiral Swinburne. The reply of the department was an order to take it out of the ship immediately. I did so, and abandoned at the same time the idea of my engine-indicator.

Lota is the center of the coal-region of Chile and the site also of the principal Chilean naval station. Our stay was pleasant. One of the places of interest was the estate of Señora Cousiño, who owned the coal-mines, but lived most of the time in Paris. Lunch was served to the officers one afternoon in the beautiful grounds of her estate, and afterward we walked through her picture-galleries. Many of the paintings were extremely large and extremely good, and represented events in the times of the conquest of South America by the Spaniards. Some of the pictures were exciting. One represented a woman dashing out the brains of a child against a tree, saying, as the story ran, that she would not be the mother of the son of a coward. I think the husband was a chief who yielded to the Spaniards more readily than the wife thought he should have done.

We were told that at this time there was trouble between the workmen in the navy-yard and the Chilean Government. We were told that it was a common practice

for workmen to become so drunk on Sunday that they could not go to work on Monday, and that the workmen regarded this practice as so natural and proper that they resented a plan which they heard the Government was going to enforce, of cutting off their Monday pay if they did not work on Monday. We were told that the Government had not up to that time reduced their pay when the workmen were absent on Mondays, but that the workmen heard that the Government intended to do so, and that they were expressing their indignation most emphatically. I never heard how the incident ended.

From Lota the fleet steamed north, Swinburne taking the first division to Valparaiso, and Sebree taking the second division to Coquimbo. On the evening of January 20, 1909, as I was finishing my dinner in the customary solitude of a captain's cabin, the orderly reported to me that there was a fire on shore. Going on deck, I joined Admiral Sebree, who had just arrived there. He ordered me to send a signal to the four ships to send their fire-brigades on shore immediately. After giving the necessary orders on board the *Tennessee*, I told the admiral that I thought it would be a good plan to put the four fire-brigades under one officer, and I asked his permission to go ashore and assume the entire command.

He assented at once, and in a few minutes I was steaming ashore in his barge. While captain of the yard in Philadelphia, I had been in charge of all the fire-drills, and the experience I gained then was a great value to me this night. When I landed at the dock, I found that the fire-brigades of the four ships were already ashore, and that they were gathered around a large wooden hotel which was burning like a match. The hotel stood on the plaza of the town, and on this plaza a good deal of furniture, taken out of the hotel, had been piled. Following my practice at the Philadelphia Navy-yard, I had a sailor follow me carrying a large American flag. It was now dark, but the flames of the burning hotel were so bright that I was quickly recognized, and found no difficulty in

assuming entire control. I threw a cordon of marines and sailors around the hotel at once to keep off the crowd, and I put small detachments in the various houses near by to prevent looting. I saw at once that the fire department of the town could accomplish little, not only because they were insufficient in numbers, but because the training and uniforms of the *bomberos*, or firemen, seemed to have been directed almost wholly to spectacular effect.

After making these dispositions, which required only a few minutes, I turned my attention to the hotel itself; and what was my amazement to see on the roof of the hotel, under which a fierce fire was raging and threatening to bring down the roof at any minute, the stalwart figure of Lieutenant-Commander Charles F. Hughes and some sailors from the *Washington*. Of course Hughes had no business to be in such a place as that because it was only a matter of a short time when the roof would fall into the fire below, and carry with it anybody who happened to be on top. Realizing the peril in which Hughes and his men were, I determined to go to the roof myself and give him my orders in person. The hotel was only three stories high, and a long ladder extended to the roof from the street. When I started to go up this ladder, I had a dim consciousness that there were a good many men yelling at me, but I could not hear what they said. One reason why I could not hear was the great noise going on, and the other was the extreme difficulty I had in mounting the ladder. The latter was so long and so light, that my endeavors to mount it made it act like a spring, and I had a curious feeling while going up that ladder that I must be presenting a ridiculous appearance. Finally, after a time which seemed to me unduly long, I arrived on the roof, and encountered a heat that was most uncomfortable, and a general atmosphere of tension. Hughes and the men with him had some wet clothes which they had wrapped around their heads, and they were trying to shove some pieces of hose through a hole in the roof and throw water down on the fire below. The im-

possibility of putting out the fire, and the urgency of getting those men off of the roof before they fell into the fire, were so great, that the orders which I gave to Hughes were not only emphatic in the tone employed, but, I fear, deplorable in the language in which they were expressed.

We were not able to save the hotel, but we were able to keep the fire from spreading. There was a brisk breeze blowing that night, and if it had not been for the prompt and effective action of our sailors, a large portion of Coquimbo would have been destroyed. The fire department of the town was neither large enough nor well trained enough to do much good, and the people of the town became so excited that they could render no assistance.

I had no serious mishaps that evening, though I had one or two narrow escapes. A ridiculous misadventure happened to me when a wall near by began to fall. Some Chilean threw his arms around me, shouting, "*Oh, Commandante,*" and jerked me backward with such violence as to throw me on the ground into a pile of dirt and rubbish. The only practical result of this was that I lost a pretty sleeve-button that I had worn in my cuff.

We had an exciting time for about three hours, and a number of the officers and men of the squadron, especially Lieutenant-Commander C. F. Hughes, behaved with great gallantry. I made an official report of the facts to Sebree, recommending a few for letters of commendation. Sebree mentioned them all and me besides, and we all got good complimentary letters, which were placed on our records in the department. One paragraph in my letter read:

The report [of Admiral Sebree] states that the work under your direction was promptly and efficiently done, and had it not been for the timely and valuable assistance rendered, a large portion of the northern part of Coquimbo would probably have been destroyed. The able and thorough manner in which you directed the working details on shore, and the absence of confusion or undue excitement, together with the fact that your

duties often required your presence in dangerous positions, merits and receives the Department's hearty commendation.

In January, 1909, I published in the *Naval Institute* an article called "A Simple Electric Steering Gear." In this article I pointed out the great advantages that electricity would have over steam if it were not for the difficulty, which up to that time had been found insuperable, of using the "floating-lever" principle in electric mechanism, although the floating-lever principle was easily utilized in steam mechanism. I recounted the troubles that I had met in attempting it—troubles which I had found so great that, although I held the basic patent on mechanism which adapted the floating-lever to electric mechanism, I had never been able to make it work successfully; neither had the General Electric Company and neither had the Navy Department. The Navy Department had made a serious effort by trying to adapt it to the steering of the monitor *Arkansas* when I commanded that vessel. Before writing the article, I had disconnected the floating lever from the steam steering-gear of the *Tennessee*, and had the quartermaster steer the ship without it for more than an hour. As a result of that trial, I had become satisfied that it was perfectly feasible to abandon the floating-lever principle, but that it would be hard for men accustomed to the floating lever to steer a ship without it until they had learned how; and so, at the end of my article I suggested the possibility of using a simple electric steering-gear. One sentence ran, "Why not have a simple controller, like those in all our trolley-cars and ships which we all know how to use?" I believe this idea has been carried out recently in some of our new ships.

About this time my attention was attracted to an extremely able article in Lord Brassey's *Naval Annual* for 1906, which had escaped my attention. It was written by Commander Charles N. Robinson, R. N., and was called, "The Gunnery Practice of the Fleet."

The chapter was largely historical, and began by reciting an Admiralty circular, dated January 31, 1906, in which their lordships expressed great satisfaction with the gunnery practice of 1905, and attributed the successful results mostly to "The great interest and keen spirit displayed by officers and men, the general introduction and use of additional instructional appliances, and the improved system of gunnery training now in operation."

Commander Robinson said of this memorandum "It marks indeed the beginning of a new era in the conditions and aspects of naval gunnery."

I should like to quote the whole of this interesting chapter, because I can hardly show otherwise how perfectly its writer was convinced that the excellent gunnery of that time was due wholly to a certain system of training faithfully carried out, for which the entire credit belonged to the British Navy, led by Admiral Sir Percy Scott. The letter went into detail as to the improvements that had gone on, and led up to the fact that on the target practice of the *Scylla*, the captain of that ship, Sir Percy Scott, "Had struck out a line of his own."

Naturally this letter irritated me a great deal. As a result, I wrote an article for the *Naval Institute*, called "The Invention and Development of the Naval Telescope Sight," which appeared in June, 1909. One paragraph read as follows:

The present writer has no desire to rob the British Navy of any of the credit which it justly merits for the marked improvement in naval gunnery during the past few years; neither has he any desire to rob Sir Percy Scott of any credit that he has received; because he has received no more credit than he deserves. All the praise that Sir Percy Scott has received, and all the official commendations, promotions and decorations that he and the officers whom he inspired have received, both in the British Navy and in other navies, have been justly earned. But, nevertheless, the present writer believes that he can prove that the credit for the accurate naval gunnery of the present day does not primarily belong to the *British* Navy, but to the *Ameri-*

can Navy; and that the naval gunnery of today did not have its birth on board the H. M. S. *Scylla*, on the Mediterranean Station, at some time *after 1898*, but on board the U. S. S. *Yorktown*, at Unalaska, on *September 22, 1892*.

I then gave a history of the invention and development of the sight, with illustrations of the earlier forms, and diagrams of the results of the earlier target practice in 1892 and 1894. The article closed with the following paragraphs:

Returning to the article in Brassey that seems to have been written under the impression that "the new gunnery" originated elsewhere than in the American Navy, it may be pointed out that the American Navy was the first to adopt, not only the naval telescope sight, but also the electrical range indicator. The first ship to be equipped with electrical range indicators was the U. S. S. *San Francisco*, which had an experimental set, consisting of one transmitter and two receivers. The test lasted one year, from July 1893, till July 1894. The test was successful, the electrical range indicator was adopted, and in June 1896, the U. S. S. *Cincinnati*, *Maine*, *Texas*, *Indiana*, *Massachusetts* and *Oregon* had been equipped with them throughout. The multiple principle of the range indicator then used is still employed; though the form of the instruments has materially changed.

That the success of the naval telescope sight and electrical range indicator in our navy was known to foreign navies before 1898, is suggested by the facts that it could not possibly have been kept secret, and that descriptions and drawings of both, with a statement of the success achieved, were published in the *Naval Institute* in June 1896.

Referring again to the impression evidenced in the article in Brassey that the new gunnery originated elsewhere than in the American Navy, it may be pointed out that the first ship to use fire control from aloft in battle was the U. S. S. *Petrel*, at the battle of Manila May 1, 1898.

This article attracted a good deal of attention from the public press, the scientific magazines, and the army and navy publications. It was a distinct challenge, and yet

not one word of objection to the statements and claims which it embodied have I ever seen in print or writing or heard expressed orally by any person.

In February, 1909, the monthly pilot chart issued by the United States Hydrographic Office, and used by the mariners of all nations, had printed on its back a full description of my method of "Navigating without Horizon," which I had described in the *Naval Institute* in September, 1907. In speaking of this, *The Army and Navy Journal* said, in its issue of February 27, 1909, "The authoritative publishing of this method brings it to the attention of mariners the world over; and the method seems to be a permanent addition to nautical science which will last as long as men go down to the sea in ships. It reflects credit on our entire navy as well as on Captain Fiske."

The Navy Department wrote me a letter of commendation for inventing and developing this system and had the letter placed on my record in the department.

From Coquimbo we went to Callao, Peru, joining the flag of the commander-in-chief before arriving, so that the fleet anchored together behind the island of San Lorenzo. Some years before, the story ran, a British and an American ship were anchored in the harbor, and the captain and officers of the British ship had what now would be called a very "wet dinner" on board the American ship, a most hazardous thing to do for the Britishers, because the ship was to go to sea at midnight. Whenever a ship is at anchor, it has a white light hoisted forward. In the days before electric lights were put into ships, this light was lowered when the ship got under way. From some oversight this was not done that night, and the captain, seeing the light of his own ship ahead, and thinking that it was the light on the island of San Lorenzo, gave the order, "Port." The ship's bow moved to the right; but so did the light. "Hard aport!" ordered the captain. "Hard aport," replied the quartermaster; but the more the ship's bow moved to the right, the more the light

moved to the right. The story is that the ship circled round the harbor three times, until some one hauled down the light.

One morning Captain Cottman and I walked from Callao to Lima. Cottman was the captain of the *California*. The walk was not very delightful or interesting, and so we amused ourselves by trying to talk Spanish to the natives. If one talks a foreign language, even not very well, with an educated person, that educated person will probably understand a great part of what he says; but if one talks with an uneducated person, he finds much more difficulty in making himself understood. Perhaps this was the reason that we did not make ourselves well understood; however, we did not succeed very well, but each of us extracted considerable satisfaction from seeing what poor success the other one had, and in calling his attention to the fact.

On the way up to Lima I told Cottman my experience in noting that the plaza always looked the same, no matter at what time of year I had gone there, and I described to Cottman the way the plaza would look. When we arrived there, the plaza looked exactly as I had predicted. There was the same dim sunlight, the same gentle breeze, the same pale-blue sky, and the same handsome cathedral; and it seemed almost that the same priests and nuns, and mantilla-covered women and swarthy Spanish-American gentlemen and Peruvian Indians were walking about that I had always seen there before.

Cottman and I were hungry after our walk, and we enjoyed our lunch at the hotel extremely. Toward the close of lunch, I said:

"Let 's have another pint of that Spanish wine; I think it 's pretty good."

"I won't take another drop," said Cottman. "I have had a little too much already. I know that, because I want to smoke. I can always tell when I have had enough to drink by that sign."

The two divisions separated shortly afterward. The

second division, going north, stopped at a number of the ports on the west coast of Central America. The most interesting place was Costa Rica, because it was the most distinctive and the best. The forenoon after we anchored, the governor came off to the ship with a large number of men and a few women. About a dozen were asked into the admiral's cabin, and I was asked in to help entertain them. Sebree supplied champagne and cigars. They all took some champagne, but very few took cigars. I expressed my surprise to one of the gentlemen who spoke English very well, as they all did; and he made an answer which surprised me greatly. It was to the effect that, while most Spanish-Americans smoked a great deal, the Costa Ricans of the educated class smoked hardly at all, because they had been taught in school that it was not good for men to smoke. He added that the lower classes, however, smoked like other Spanish-Americans.

Costa Rica was evidently a real democracy. When the party left, some went in our steam launch, and some in the sailing-launch, which was towed by it. I expected, of course, that the governor would go in the steam launch, and sit in comfort on the cushions in the stern. But he declined to do this, and got into the sailing-launch with the greater part of his company.

The governor invited Captain Knight and me to go ashore one afternoon and see the town. We were glad to do this, although we knew that the act of getting out of the boat on to the dock would be one requiring considerably agility and loss of dignity, because the water was always extremely rough at the dock. We passed the ordeal in safety, however, and spent one of the most interesting afternoons, we both agreed, we had ever spent. This was not because of any magnificence of natural scenery, or any beauty or splendor in the town; but on account of the character of the people and their view of life. For instance, in speaking of the President of Costa Rica, the people we met did not speak of him as a man of

great ability or shrewdness or political skill; but as a good man, and a man who did everything he could for the people of Costa Rica. As we walked through the streets, the people who met the governor greeted him pleasantly, but not at all obsequiously; they greeted him as a man whom they esteemed and liked, much as one greets a bishop. The things which the Costa Rican gentlemen pointed out to us as the objects of interest were the schools and other public works, such as hospitals, churches, etc. At one time I said to the governor as we were walking through the town: "Where were you born, sir?"

"Right here," he said, striking his knuckles against a brick house, "I was born right in this very house."

A pleasant cruise north, in which the fleet was exercised a great deal at all sorts of tactical drills, brought us to San Francisco.

"Breathes there a man with soul so dead,
Who never to himself has said,
When home his footsteps he has turned,
From wandering on a foreign strand,
This is my own, my native land?"

How good it was to get back to God's country again, and to be with people of one's own kind, who spoke his own language and had the same cast of features! How beautiful San Francisco looked! How inspiring was the outline of the mountains against the sky, and how splendid were the sunsets behind Mount Tamalpais!

After a brief stay in San Francisco, the second division went north to the Bremerton navy yard for repairs and alterations, especially in the fire-control system.

Only two incidents of the trip made much impression on my memory. One was getting under way in the narrow harbor of Port Townsend about one o'clock in the morning, and leading the division out of the harbor. The other was making that turn of the bend near the navy

yard and then going alongside the dock. I conducted all three operations successfully, however, and got the ship tied up just before noon.

I treated myself to a glass of wine at lunch that day, and I stretched my legs out under the table and leaned back in my chair with the pleasant feeling that I had passed successfully the first half of the most difficult ordeal a naval officer has to pass, his "captain's cruise."

CHAPTER XXX

THE CAPTAIN'S CRUISE

Second Year

MY wife was much better by this time, which was the month of June, and she and my daughter joined me shortly after the ships reached the navy yard. I had a pleasant suite engaged for them at the Hotel Sorrento. The Sorrento proved to be one of the pleasantest hotels we had ever lived in. One of its delightful features was the large dining-room in the upper story, from the windows of which magnificent views could always be had in the daytime of blue waters and distant mountains, of which the peaks sometimes stood out sharp and clear, and sometimes were shrouded in dense, white clouds.

Most of the work to be done on the *Tennessee's* fire-control system was in the direction of assuring the ability of the ship to fight in case of the disablement of the conning-tower. I had become much impressed, as most naval officers had, with the extreme vulnerability of the conning-tower, and also with the liability of the captains and others in the conning-tower to be disabled by smoke and by fragments of all kinds coming through the slits in the conning-tower; but I went further than anybody else in proposing a remedy.

My remedy was to abolish the slits altogether, and to have the people in the conning-tower use periscopes, projecting upward through the top of the tower. I even went to the extreme of advocating there be no mechanism whatever inside the conning-tower; because it could be easily disabled, and because, if it were disabled, the ship would be helpless. I advocated steering the ship and giving orders to the engine-rooms from stations below

deck; one station being in the communication-room directly below the conning-tower, and the other station being at the extreme after-end of the ship, in the steering engine-room.

I had had this idea in my mind for years, and had made several experiments which had satisfied me of its practicability. One day when I was captain of the *Minneapolis* I had handled the ship for more than an hour going down Chesapeake Bay at high speed by simply telephoning to the steering engine-room, and telling the quartermaster how to move his steering-wheel. On another occasion, while in Magdalena Bay, I had got the *Tennessee* under way, and had steamed out from her place in the column into the bay and manœvered for over an hour there, by the same means. One difficulty I encountered was the fact that the quartermaster in the steering engine-room had no good means of telling how to steer a straight course, for the reason that the compass was very sluggish. The reason for its being sluggish was that it was entirely inclosed by the steel structure of the ship, which, though it was thin at that part of the ship, acted, nevertheless, like a magnetic shield, and prevented some of the magnetic lines of force from reaching the compass. While at Bremerton, however, I succeeded in finding a place in the steering engine-room, where the magnetic field was pretty strong, and where the compass would work fairly well. The place was not close enough to permit a good view of it from the steersman's place at the steering-wheel, but I was able to overcome this trouble by a simple combination of a mirror and a lens.

The invention and development of the gyroscopic compass, for which Mr. Elmer Sperry has done more than anybody else, has overcome this difficulty altogether, because a gyroscopic compass does not depend on magnetism at all, and is directed at the true north instead of at the magnetic north. For these reasons, and because of the development of the periscope, all the schemes which I was trying in the *Minneapolis* and *Tennessee* are very

much better carried out now. At the present time my methods, as then carried out, seem rather crude; but this is the fate of all pioneer work. Robert Fulton and James Watt were poor engineers, judged by modern standards.

Human progress is a groping thing, and advances in a jerky way, mostly by the efforts of only a few men. These men take the first steps, and if the first steps lead toward success, then many men follow them. "*C'est le premier pas qui coute*" ("It is the first step that costs"), and the man whom it costs is the man who makes the step. The man who makes that first step is apt to lose his footing and hurt himself; the men who follow, see that the first step is practicable, and they see also where it should have been directed a little more to the left or the right or not quite so far or a little farther. It is these men who "profit" by the first steps, and not the men who make them. It is the Henry Fords and not the Robert Fultons who "succeed."

One of the first things the officers had to do after reaching Bremerton was to take the fifty-mile walk which President Roosevelt had ordered. This was looked forward to with considerable concern by the older officers, because we realized that it might develop unrecognized weak points in our bodies, as it had done in those of some army officers. The walk was to be preceded in each case by a careful physical examination. It was to be completed in three days, followed by another careful physical examination, to see if any injury had resulted.

In preparation for the walk, I bought a pair of shoes in San Francisco which had been designed for long walks and were called "Kozy Klogs." I walked in them a little, so as to accustom my feet to them, and them to my feet; but on the first day of my walk I forgot to put them on, and walked in my ordinary shoes. My walk that day was in a bracing air, and amid scenery of river and lake and mountain and hill and pine forest of such inspiring grandeur that walking was a pleasure. My walk was for ten miles in one direction, and ten miles back, making

twenty miles. I returned on board quite tired, but far from exhausted, and I was able to take up the paper work of my office after I had had a bath.

The next day I put on my Kozy Klogs and started on my walk, but decided to go in another direction. I walked for five miles amid some scenery that was even more beautiful than that of the day before, but over a road that was hillier, and as the day was warmer, and as the road was dusty, I was tired at the end of the first ten miles, and wanted to return to the ship. My feet felt as big as lobsters and as red. My Kozy Klogs had turned out to be instruments of torture. I retraced my five-mile walk, however, and got to the end of it without much distress, but my way back was through purgatory. I have never been so tired in my life as I was walking up a steep, dusty hill on my last two miles. I finally arrived on board ship, and when I sat down on my bunk to take my shoes off, I was so tired I could not get up again. The principal trouble was with my feet. The surgeon repaired them that night, however, and I walked the remaining ten miles without difficulty the next morning.

One of the pleasant incidents of our stay at Bremerton was the exposition given at Seattle, near by. While this exposition was not so large as some other expositions had been, it was conducted with more foresight and administrative ability perhaps than any previously held. Naval officers have experiences all their lives in matters of administration and arrangement, and we were all enthusiastic about the way in which this exposition was carried on. The incident that stands out most clearly in my mind in connection with it is a ride that I took out to the grounds from the water-front. I was in a handsome open automobile, and I sat on the back seat alone, dressed in my gorgeous uniform, terminating at the top in a black-and-gold chapeau, and including epaulets, medals, etc. The day was fine, and as I drove rapidly along, I realized from the glances of the people on the streets that I must be making a rather spectacular appearance. It occurred

to me that an observer would naturally suppose that I was feeling as fine as I looked; but as a fact, I had such a stomachache that I could have cried.

On New York day at the exposition there was a large dinner given, at which were present two possible Presidential candidates, Governor Hughes of New York and Governor Johnson of Minnesota. It was known that Governor Johnson was to go home from Seattle and undergo a surgical operation. He did so, and died as the result of the operation.

The good people of Seattle and the good people of the navy-yard at Bremerton were very kind indeed to us, and my wife and daughter and I were the recipients of a great deal of kindly hospitality, which we shall never forget. Our stay there was one of the bright spots in our memories. But the earth continued to turn on its axis, bringing its alternation of light and darkness and its succession of working days, so that the work which was to be done on the *Tennessee* and other ships was finally finished. At last, one evening at seven o'clock, the division got under way and stood north through Puget Sound, and afterward to the westward through the magnificent strait of San Juan de Fuca. The *Tennessee* led the procession, and I stood on the bridge all night, piloting her, and verifying her position continually by the use of the range-finder. Before daybreak we had passed Cape Flattery, and were standing out into the Pacific, bound for San Francisco. Two days later the *Tennessee* led the column into San Francisco Bay and anchored there about midnight in a heavy mist that was almost a fog.

My wife and daughter joined me in San Francisco, and we decided there that they should go out to Honolulu, and return from there to San Francisco. Sebree had now become commander in chief of the fleet, and had received orders from the department to go to Honolulu, thence to the Admiralty Islands, near New Guinea, and thence to Manila.

So when the fleet started for Honolulu, my little family

followed in a passenger steamer. The fleet made the trip at the highest speed they could, which averaged nearly eighteen knots. This was the record up to that time, for so long a journey, made by so many ships.

We had a pleasant stay in Honolulu, of course; all stays in Honolulu are pleasant. During our stay there my wife and I decided that she and our daughter would go out to Shanghai again, and revisit old scenes and acquaintances, because we now knew that the fleet was to go there from Manila.

The trip of the fleet to the Admiralty Islands was pleasant in the first part, but so hot in the second part as to be decidedly unpleasant. We did not like the Admiralty Islands at all. We had thought that Manila was extremely hot, but Manila was cool compared with them. We were there only a few days, and I did not go ashore, feeling hot enough on board ship. The officers who did go ashore described the customs and costumes of the natives as evidencing almost the lowest state of civilization a human being could live in.

We headed for the comparatively cool precincts of Manila with great joy though we knew that in Manila Bay and outside we should have to work much harder than people like to work in tropical climates, in order to get ready for day target-practice and night target-practice, and afterward to carry out those practices. Nobody who has not been on board a modern man-of-war knows how strenuous this kind of work is, and what a period of anxiety it is, especially for the captains and gunnery officers of the ships. Target-practice shows better than any other one thing the condition of efficiency of each ship. For this reason an officer's professional reputation depends so much on the way he goes through target-practice, especially if he is a captain or gunnery officer, that the period of target-practice is like a gentle nightmare.

We were in Manila at this work about a month. The *Tennessee* did better than any other ship in the fleet, and there was a long period before the results of the target

practice had been fully worked out in the Navy Department when the *Tennessee* was supposed to have done better than any other ship in the navy. After the results had been thoroughly worked out, however, it was announced that the best ship was the *Vermont*, which received a mark of $48\frac{7}{10}$; that the *Tennessee* was the second ship, with a mark of $44\frac{9}{10}$; and that the *Maryland* was the third ship, with a mark of $41\frac{5}{10}$. The captains, executive officers, navigators and gunnery officers of the *Vermont*, *Tennessee*, and *Maryland* received commendatory letters from the department because of the efficiency of their ships.

This was the fourth commendatory letter that I had received from the department during my cruise. The first was for my method of "navigating without horizon," the second was for my method of correcting range-finders, the third was for putting out the fire in Coquimbo, and the fourth was for the efficiency of my ship at target-practice. In that target-practice there were twenty-seven battle-ships and armored cruisers competing.

After target-practice, we headed with joy toward Shanghai. We arrived at Shanghai, or, rather, at Wusung, three days before Christmas. Wusung is on the Yang-tse-Kiang, just where the Wusung River enters it, and about fifteen miles below Shanghai. Wusung is a most uncomfortable anchorage. The tide runs at great velocity in one direction or the other, and the bottom is so soft that the anchor sinks deep into the mud. I anchored the *Tennessee* with one anchor, but the next morning she drifted, and a pilot who came on board said it was better to moor with two anchors, because a ship was moved so violently by the current, when the tide changed, that she was apt to pull her anchor out than if there was only one. I took the advice of the local expert and moored. The day before we were to leave, Admiral Sebree suggested to me that I had better see if the anchor-chains were clear, because he had cruised in China before, and knew that ships were apt to foul their chains at Wusung. I was

very grateful to Admiral Sebree for this advice, and I followed it at once. It was fortunate that I did so, because the chains were found to be in such a horrible tangle that it took us from ten o'clock in the forenoon until after eleven o'clock that night to get them untangled.

About four o'clock on the day of our arrival I went ashore at Wusung to take the train to Shanghai. After I had climbed up on the dock, after a rough-and-tumble trip in a steam launch, I found that I had barely time to catch the train to Shanghai. Some Chinese coolies were there, each with a wheel-barrow in which two passengers could sit, one on each side, and they suggested to me in Pigeon-English that I should be trundled up to the train in a wheelbarrow, because, "No gotee time to walkee." As their reasoning seemed to be good, though ungrammatically expressed, I got up on one side of a wheelbarrow, with considerable anxiety. I expected to be pushed along over some rather uneven ground that I saw, but that was not the expectation of the coolie. If I had known what his expectation was, I do not think I should have allowed him to fulfil it; but after we got started, it was too late to stop, and we could not turn around. He started at full speed along a very narrow sea-wall that skirted the shore, and of which the side ran down vertically to the rocks about twenty feet below, on which the surf was breaking. My feet dangled over the precipice; and I fully expected each moment that the wheelbarrow and the coolie and I would descend to a common destruction; but, as a matter of fact, we ran along with absolute smoothness and with perfect balance, and without swerving either to the right or to the left.

The railway to Shanghai ran along a narrow stream, muddy, sluggish, and shallow. On both banks of this stream were many Chinese houses, and on this stream were many Chinese boats. In these boats and houses were many thousands of Chinese men, women, and children. There were no signs of any attempts at sanita-

tion of any sort, and it was evident that all the water which was drunk came from that nasty stream. Yet the men, women, and children looked as healthy as most people, and the babies were noticeably fat.

I rode in a jin-rikisha to the Palace Hotel, where my wife and daughter were. I found my wife laid up in bed with a heavy cold and under a doctor's care. I had a conversation with the doctor the next morning, and he told me that she was very ill, and could not possibly get well for a week or more. This was disquieting information, because she had her passage engaged for Yokohama in a steamer which was to leave in a few days. Besides that, the fleet was to leave in a few days for Yokohama, and then go to San Francisco. That night she was so ill that I made up my mind that I should have to stay with her in Shanghai even if I had to give up the command of my ship. She remained ill for several days, though gradually getting better. Finally, the day before the steamer was to leave, she suddenly became perfectly well.

In Shanghai one can get more for a dollar, or could then, than in any other place in the world. My wife and daughter had adjoining rooms, each of which was large and comfortable, with its private bath, for five yen per day each, which included meals and a service that I have never seen surpassed and seldom equaled. The aggregate cost of the entire hotel living for both was somewhat less than five dollars in American money per day, and all other prices were on a similar scale. A bottle of excellent port cost only two yen, somewhat less than a dollar. Other wines were similarly cheap, and so were all imported articles, because Shanghai was a free port. Articles of silverware, silks, and things of Chinese workmanship in general being likewise inexpensive, we were able to exchange some pretty and yet useful gifts at Christmas.

From Shanghai we went to Yokohama, which, though

considerably farther north, was considerably warmer, because the Japan stream from the south passed near Yokohama and warmed it.

The *Tennessee* had an exhilarating trip through the beautiful Inland Sea of Japan, through which I had gone thirteen years before in the other direction, when navigator of the *Petrel*. As we stopped at the entrance of the Strait of Shimonoseki, I noticed a Japanese boatman standing in his little boat. The weather was very cold, and we on board the *Tennessee* wore all the clothes that we could pile on; but this boatman was standing at ease, and apparently in comfort, without any clothing whatever except a little shirt, and a pair of trousers that came just below his knees.

Naval officers have to study weather conditions a great deal not only in regard to the action of the weather on the sea itself, but also its effect on human beings. As a result, most of us have come to think that the ill effect of cold is not nearly so great as people suppose. The only man who died on board the *Tennessee* during the entire two years that I commanded her died of pneumonia. He died in the tropics so long a time after we had left the cold weather that the doctors knew that his illness had been contracted in the tropics. When we went from Manila to Shanghai, we made a sudden change from hot weather to a temperature of thirty-two degrees, Fahrenheit, when we arrived. I was much concerned lest the sudden change should cause a great deal of illness. It caused hardly any that was worth considering.

During our stay in Yokohama my family lived at the Grand Hotel, which was much more expensive than it had been on our previous trip thirteen years before, but no better. We were entertained pleasantly in Tokio at both official and unofficial dinners and receptions. A delightful luncheon was given by Baron Takahashi to Admiral Sebree and the captains, at which my wife and some other ladies were present. It was a Japanese luncheon, with modifications, and it would have been even

more pleasant than it was if we had not had to sit cross-legged on the floor. The official dinners had one peculiarity that I had never seen before, that all the guests were supposed to leave at ten o'clock.

The American ambassador, Mr. Bryan, arranged an audience for Admiral Sebree and the captains with the Mikado. We went up from Yokohama to Tokio by train, then drove to a hotel in Tokio where we put our special full-dress uniforms on, and thence to the mikado's palace. We drove into an inclosure and up to an unpretentious building. On entering, we were met by officials in non-military uniform and escorted to a waiting-room. This waiting-room was plainly furnished, but with the exquisite taste and cleanliness of the Japanese. The place was noticeably quiet; not a sound could be heard. Finally, we ranged in line, one behind the other, and marched into the adjoining room. There we saw standing a man in uniform, with his left hand resting on his sword. We went up to this man in the order of our rank, and were successively presented. The mikado shook hands with each of us, and said he was glad to see us. His manner was unassuming and almost deprecatory. To me he did not look like a well man.

After having been presented, each officer backed out of the room by a door different from the one by which he had entered it, and thence returned to the waiting-room. Before going into the emperor's presence, the only direction given to each officer was not to turn his back on the emperor.

During the time we were in the inclosure that held the palace I did not see a military uniform except that of the emperor.

A few days before we left Yokohama, a Japanese photographer sent an advertisement on board. Thinking it might be interesting to own a Japanese photograph of myself, I sat for one. In a few days I received some proofs, and I thought they looked a little hard. When I took them to him and made some such remark, the

photographer said in very precise English: "This is truth without mercy; I will put some mercy now in your picture." I asked him to put some mercy in, and he did so. Some one in his office, I suppose a clerk, wrote on the picture, "Captan Tennesy."

We arrived in Honolulu about the first of February. My little family went again to the Moana Hotel at Waikiki, where the surf breaks on the beach, from which beautiful views can always be had of mountain and sea, and where it seems easier and pleasanter to live than in any other place in the world.

One of the incidents of our stay was the most beautiful ball I have ever seen. It was given by the officers of the fleet in partial return for the hospitalities which they had received, and was held on board three ships, the *Tennessee*, the *Washington*, and the *California*. The *Tennessee* was secured at one side of a long, wide dock, and the *California* was secured alongside the *Tennessee* on the side away from the dock, and the *Washington* was secured to the other side of the dock. The dock itself was decorated with flags and with beautiful plants and flowers, which were loaned by citizens of Honolulu, and on the dock a structure was built representing the quarter-deck of a ship, on the stern of which was painted in large letters the name, U. S. S. *Honolulu*. The *Honolulu*, the *Washington*, the *Tennessee*, and the *California* had each its band and supper and dancing-floor; so that, although thousands of people attended, there was plenty of room and plenty of entertainment for every one. The night was warm, but not hot; a gentle trade-wind blew, and the full moon gave the last touch of perfection to an occasion unimaginable anywhere except in Honolulu.

The fleet left Honolulu on February 12, 1910, and headed toward the United States. As we sped to the eastward after clearing the harbor, I watched the gradually receding palms and houses of the town, and Dia-

mond Head growing smaller in the distance. I remembered the first morning I had seen Diamond Head in February, 1875, just thirty-five years before. I called to mind the many experiences I had had there since then, all of them delightful; and I realized with the helpless feeling of advancing years that it was hardly possible that I should ever behold again those beautiful and familiar scenes, now fading from my view.

Before leaving Yokohama, we had received word that the *Tennessee* and *Washington* were to leave the Pacific and go to the Atlantic, to form part of a special service squadron under Rear-Admiral Staunton; and that the *Tennessee* and *Washington* would proceed to Bremerton from Honolulu, while the other ships would go to San Francisco.

Therefore, before leaving Honolulu, Admiral Sebree gave me written orders to proceed with the fleet from Honolulu; but to be prepared after clearing the harbor to receive a signal from him to take command of both the *Tennessee* and *Washington* and proceed with them to Bremerton.

This signal was given about an hour after leaving the harbor. I immediately changed the course of the *Tennessee* to the northward, and signaled to the *Washington* to follow. We were within sight of the rest of the fleet the remainder of the afternoon, but on the following morning I could say to myself,

I am monarch of all I survey,
My right there is none to dispute.

Everything promised a pleasant trip for the first few days and a rough one for the last few days; but one afternoon, two days after leaving Honolulu, I received a signal from Captain C. C. Rogers, who then commanded the *Washington*, that some sickness had broken out, which the doctors diagnosed as smallpox. The next day the diagnosis was confirmed. On arriving in the

neighborhood of Port Townsend, where there was a hospital belonging to the United States Marine Hospital Service, I sent the *Washington* there.

The *Tennessee* went to the navy-yard at Bremerton, and I remember making that last turn before reaching the navy-yard just after dusk. We anchored near the dock, and the commandant directed me to go alongside the dock at seven o'clock the next morning. When I started, I remember that I had a faint consciousness of not being very alert. By that time I had handled the *Tennessee* in so many difficult situations, and had been so fortunate in meeting those situations with success, that on this occasion, which was the last one in which I ever put a big ship alongside a dock, I was overconfident. The result was that I did the worst piece of ship-handling I ever had done, and brought the ship alongside the dock with a shock. Before hitting the dock, I realized what a bad landing I was going to make, but I did not realize it until too late. I had not made my plan with sufficient care before starting. I saw that I had not used foresight, the value of which Harry Taylor had impressed on me many years before. My bad landing that morning was a shock to me in more senses than one, and I was glad afterward that it had happened, because it *reminded me very forcibly of the necessity of making proper plans before taking action.*

Shortly after reaching the navy-yard I was delighted and amazed to read in the *Seattle Post Intelligence* that Secretary Meyer had appointed four aids to coördinate the work of the bureaus of the Navy Department and to assist him in giving the activities of the Navy Department a definite direction.

For many years projects of this kind had been suggested from time to time, and boards had been appointed to make recommendations as to what had best be done. These efforts could all be traced to Admiral Luce, and they had the support of the navy as a whole; but they had never come to any result. The Navy Department,

as organized by law, was administered by a secretary of the navy, and divided into eight bureaus. Each one of those bureaus was independent of every other, and each chief of bureau was independent of any authority whatever except that of the secretary. As the secretary was a civilian, and untrained in such things as ordnance or steam engineering, the chiefs of the bureaus conducted their departments on lines which they themselves developed, and which had little reference to the lines in which the other bureaus were working. Secretary Whitney had remedied the evil in one particular, by making the supplies for the navy belong to the navy as a whole, and not to the various bureaus. This prevented duplication of supplies, but it did not produce coördination of effort, or the directing of the Navy Department as a whole toward any definite end. Still less did it plan or even consider any definite end toward which the activities of the department should be directed.

The result was that there was no coördination except of the most general kind, and no selection of any object toward which the activities of the navy should be directed. Secretary Moody and Secretary Newberry had appointed boards, one composed of civilians and officers, and one of naval officers only, and these boards had made very definite and excellent recommendations. Most secretaries had taken that amount of interest in the navy which any man takes in any undertaking which is entirely different from anything else he has worked at all his life, and had been induced to appoint such boards only by the insistence of naval officers. An exception must be made as to Secretary Newberry, who had enlisted for service in the Spanish War, and who was genuinely interested in the navy. But all the secretaries except Newberry had been fearful of losing their "power," and the bureau chiefs had opposed such effective opposition that no real steps had been taken.

Here at last was a secretary of the navy actually taking a definite step which would reduce his "power" in the

sense that it would take certain details away from him, and doing something which had no other object than the efficiency of the navy! It was an incredible thing; but it had happened.

Secretary Meyer had established a system by which he was assisted in performing his duties by four aides, one for operations, one for personnel, one for material, and one for inspections. Congressional authority was not asked for, but it was not necessary so long as Mr. Meyer should remain secretary of the navy. The hope was that, before he should cease to be secretary, congressional authorization would be obtained, or that the system would be found to be so good that the succeeding secretary would not dare to abolish it.

One good feature about not having congressional action was that political influence would not probably be employed to have any officer appointed to one of those positions. The appointments of chiefs of bureau had too often been influenced by political considerations, one reason being that each appointment had to be confirmed by the Senate. The excellence of the appointments made by Secretary Meyer proved that no political considerations influenced him in his choice of aids. The first aid for operations was Rear-Admiral Wainwright; the first aid for personnel was Rear-Admiral Potter; the first aid for material was Rear-Admiral Swift; and the first aid for inspections was Rear-Admiral Ward. These were all men of experience, ability, and character.

My wife and daughter had gone to San Francisco with the intention of visiting the southern part of California, and returning to San Francisco. I had expected to be detached, because I had been a year and a half in the ship, which at that time was the average length of a captain's command, and I had made general plans to join my family in San Francisco and go east with them. But shortly after reaching the navy-yard I received orders to take command of the *South Dakota* and *Tennessee*, and proceed with them, by way of Panama and

the Strait of Magellan, to Maldonado, in Uruguay, and report there to Admiral Staunton. The *South Dakota* had been substituted for the *Washington*, which had not been able yet to get rid of the smallpox germ.

So my wife and daughter, instead of going south, came north to Bremerton again, and spent two days on the train in a washout, with very little to eat and drink. On the tenth of March they started east overland, and I started south overseas. When I backed the *Tennessee* out from the dock, she was the most unman-of-war-like-looking ship I had ever seen. As we did not expect to be able to get any vegetables until we reached Maldonado, the upper deck was almost covered with potatoes and onions, and these were entirely covered with coal-dust; because I started the ship away from the dock as soon as the last bag of coal had come on board.

We had a beautiful trip through Puget Sound, and out through the Strait of San Juan de Fuca. The men squirted water over everything, and scrubbed everything to their hearts' content, and so everything was virtually clean by sunset. I had ordered the *South Dakota*, which was at San Francisco, to report to me off the Farallones Islands at noon on a certain day. At that time she did so, and then took up her station on the starboard beam of the *Tennessee*, two thousand yards distant. In an hour she had corrected her compass and her speed of engines so as to go at exactly the same speed and in the same direction as the *Tennessee*, and after that we were able to keep together without any signaling whatever all the way to Maldonado.

During all the time I had been in command of the *Tennessee*, until I left Honolulu with the *Washington*, my time had been so fully engrossed day and night, including Sundays, with the management of the ship and all the multitudinous demands upon my attention in the drills and discipline of nearly a thousand men, that I had not allowed my thoughts to wander to other fields. I had not even allowed myself to think, except at rare in-

tervals, about my turret range-finder, which I had mounted on the forward turret shortly after I took command. Immediately after leaving Honolulu, however, I was able to relax my attention and to think occasionally on general subjects.

The first subject that attracted me was one that I had suggested somewhat in my essay, "The Naval Profession," that of comparing the effect which a ship can exert with the effect which an army can exert. My suggestion had not attracted much attention at the time, and though some people thought it was rather striking, it did not seem to have any practical value. It occurred to me now, however, that it might be made of great practical value, provided it was sound. The more I thought of it, the more it seemed to be sound, and capable of practical application. One of the first things that struck me was that, if it was sound, it must be because the power which a ship or army exerts is mechanical; and of this the fact that my own inventions had increased the power of navies by increasing their power to do mechanical destruction seemed almost a complete proof. This led to the idea that the influence upon history which Mahan called "sea power" was not really sea power, but naval power, and that its influence was due to the fact that this naval power could deliver blows which would have a mechanically destructive effect. In pondering over this idea in the hours of leisure which the long sea-trip gave me, a realization flashed into my mind that a *navy or army is merely a development, produced by centuries of progress, of earlier means for waging war, and that, if we would carry back our history of means of warfare far enough, we would come to the club with which Cain killed Abel.*

This idea startled me, and I proceeded at once to endeavor to express it on paper. I knew it would be useless to try to get any support for such an idea unless I could get people to see it gradually; but in the endeavor to do this I wrote for many days without any success what-

ever, and without perceiving any line along which I could work. Finally, however, my ideas became more clearly arranged, and I thought I saw my way to writing an article in which I should bring out my mechanical theory, by analyzing the nature of sea power and showing that it was essentially naval power, and then by analyzing the nature of naval power and showing that it was essentially mechanical. Work on this paper occupied most of my leisure moments until we arrived at Maldonado in the middle of April, and from that time, but at less frequent intervals, during the rest of the year.

Our first stop was to be at Panama. The night before reaching Panama, which we expected to reach about noon the following day, I went upon the bridge about ten o'clock, as was my custom, to see if the officer of the deck understood his night orders, and if the dispositions for the night had been properly made.

I stood on the port side of the bridge and looked over the sea for a few minutes. Suddenly I saw what looked like a line of white foam, quite distant, and extending from our port beam in a diagonal line to a point ahead of the ship and across the bow. I knew that our navigational calculations fixed our position about fifty miles from shore; but what was that long white line? It looked like a line of breakers. The night was calm, and the sea was smooth, and that line showed with a distinctness that was painful.

I went into the chart-house and examined the chart very carefully near the point which represented our supposed position, but could see no explanation. Then I went back to the bridge, where I had stood before, thinking that perhaps my eyes had deceived me. But there was that line, looking the same as before, only clearer and nearer; in fact, it did not look like a line now; it looked more like surf.

"Do you see anything peculiar on the port bow?" I said to the lookout.

"Yes, sir; I see those breakers," he answered.

He answered in a perfectly matter-of-fact way; and yet he knew that if the ship ran into breakers at the fourteen-knot speed at which we were then going, she would become a total wreck, and he would probably be drowned.

I asked the officer of the deck and the quartermaster what the thing looked like to them, and they all said it looked like breakers. Again I went to the chart-house, and again I could find no justification for supposing that what looked like breakers could be really breakers.

Then I went back to the bridge again, and stood on the port side. By this time the foaming water was so near that we could see it with absolute distinctness, and hear it besides. Closer and closer we got to it. The temptation to stop or to head away from it was tremendous. I held on to the brass railing of the bridge in front of me, and so did the men by me, and watched the ship rush toward the foaming mass. Finally we were so close to it that it was impossible to avoid it even if I had wished. I gripped that railing so tightly that my hands ached all the next day, as I saw the ship plunge into the foaming water, and go through it unharmed.

I suppose that what we passed through was merely the tide-rip, which is usually formed when a tide goes into or comes out of any harbor and meets the other tide. I do not think it could have been anything else; but I had never seen a tide-rip make such a disturbance before, and I have never seen it since.

Next day, shortly before noon, the two ships were advancing at fourteen knots toward the anchorage. I had always endeavored in the *Minneapolis*, *Arkansas*, and *Tennessee* to anchor in rather a dashing way, and on this occasion I was making a special effort, because I saw a foreign man-of-war ahead, near where we were to anchor. Shortly before getting to the point where I had intended to slow down, the navigator reported to me that he had made a mistake in the last position he had re-

ported, and that the ships were very much farther ahead than he had supposed. I had an instantaneous vision of running into a shoal, and having the *South Dakota* ram the *Tennessee* from behind before she could stop herself, because there was a shoal directly ahead, and this shoal was not very far away, if the navigator's last belief in regard to our position was correct. I thought it was not correct, however, and told him to verify it. Meantime we kept charging ahead. To my intense relief, he came to me soon, and reported that we were perfectly safe, and that the position he had first reported was correct.

So I was able to make a fine anchorage, after all. On anchoring I was surprised to receive a salute of eleven guns from the foreign man-of-war. This salute was not due me, because I was not a commodore; but I realized that the senior officer's pennant that our mast-head carried had been mistaken for a commodore's pennant, and so I returned the salute gun for gun.

This was my first salute. It was an honor which I did not deserve, but I am not the only man in the world who has been accorded an honor which he did not deserve.

The first evening after anchoring in Panama, I asked Captain Smith of the *South Dakota* to dine with me on shore. It was delightful for us to sit in a quiet corner in the hotel dining-room in civilian's clothes, and be as undignified and boyish as we felt like being, as an escape from the rigid and solitary dinners we had to have in our cabins on board ship. When I first joined the *Tennessee*, my boy (who was named Mann), used to stand in front of me, on the opposite side of the table, and he was so fearful that he would not foresee my wants that he kept his eyes fixed on me the entire time. This close attention to duty, commendable as it was, affected me painfully after a while; and so I told him to stand behind my chair. I could always tell that he was there, because I could hear him breathing.

The next day I asked Smith to go ashore with me and help me buy a hat. I purposed buying a Panama hat, and on this occasion I made up my mind to throw prudence to the winds, and buy the best Panama hat I could find, seeing visions of that Panama hat gracing my white head during the summers of my declining years. So I put a good deal of money into my pocket, and Smith and I went to the largest hat store in the town. But I could not find any hat there that cost more than fifty Panama dollars, which was only twenty-five gold dollars. Smith was disgusted, and said he would not have come ashore with me if he had known that I was going to buy a "cheap tile."

That hat looked very well the following summer, and pretty well the succeeding summer, though it seemed to me that it looked unaccountably smaller. The next summer I had it blocked and stretched, but it was smaller still. Every summer that hat has become smaller and smaller, more and more like Happy Hooligan's hat, for some reason which nobody can explain; so last summer I gave it away.

Our reason for going to Panama was to get coal to take us to Sandy Point in the Strait of Magellan. We coaled, as all ships do, in the lee of Toboga Island, in the waters said to be the residence of "Toboga Bill," a famous shark of great size and ferocity. The next forenoon, about eleven, the men asked permission to go in swimming. I was sorry they did so, because I was afraid of sharks; and yet I could give no reason for refusing permission, since it was the custom for the men in our ships to go in swimming there.

I gave permission; and then, feeling somewhat uneasy, went up on the upper deck, where I could assure myself that all due precautions were taken. The booms which protrude from the ship's side forward when at anchor, and are used for securing boats to, were lowered until the lower ends touched the water, so that the men could get on board the ship readily; and a boat on each side was

stationed in such a position that, in case of threatened drowning, it could reach the danger-spot in a few seconds.

At one time, when there were more than five hundred men in the water, my glance happened to go to a man on the port side. The water was absolutely smooth, and I could see the top of his head just even with the surface of the water, as though he were "treading water." There seemed nothing remarkable in his appearance until I noticed that he was gradually sinking. There was no sign of any struggle, and there was no blood; yet he was undeniably sinking slowly. By this time some of the men near him had noticed his disappearance and had given the alarm. The boat on that side pulled up to where he had been last seen, and many men dived for him.

That is the end of the story. He was never seen afterward, and his body was never found. He was a healthy young man of twenty-two, and no good reason was assigned by anybody for his sinking. One theory was that some shark had seized him by the foot and dragged him down, and that the shock had for some reason been so great that he did not even struggle.

Panama Bay was intensely hot, and so we looked forward with pleasure to the trip down the west coast of South America, over the smooth ocean of those regions, and under their dim sunshine. We knew that we should meet rough weather when we got to the Strait of Magellan and the rocky peaks of Cape Pillar. The afternoon before arriving there I spent all the time at my desk, reading the sailing instructions about the dangers near the entrance and through the strait, especially near the entrance. Sailing directions are written with the intention of pointing out the existing dangers to mariners, and they are written so realistically as to impress the mariners very fully with those dangers. On this particular afternoon the ship was rolling and pitching violently, and I could hear the wind howling on deck and

feel the engines thumping under me. The combined effect of this and what I had been intently reading suddenly gave me a sort of nervous spasm that must have lasted fifteen minutes. The idea of rushing into the rock-bound strait, in the midst of the terrific seas I had been reading about, suddenly filled me with dread. It seemed a thing that I could not possibly undertake. The feeling grew more and more acute. Then it suddenly passed away.

I wished to enter the strait as soon after daylight as possible the next morning, in order to get to Sandy Point that night. So I got the ships within a short distance of the entrance the night before, and slowed down to such speed as would get us to the entrance before sunrise. I rose an hour before daylight, and waited on the bridge for perhaps an hour, watching the magnificent spectacle of the day breaking behind a dim, rocky barrier that seemed to be in front of us, closing the way entirely, and covered with clouds that descended to the water's-edge. When the sun rose, these clouds took on various reddish tints, dark and light, and became gradually thinner. As they became thinner, they melted away slowly near the top, unveiling more and more of the sky, and letting an occasional snow-clad peak be seen. Then they retreated gradually at the bottom, and disclosed a rocky shore and tremendous waves breaking on it. Finally they uncovered a narrow entrance that pierced those rocks, and extended toward the east.

By this time I was heading toward the entrance at slow speed, with the *South Dakota* a quarter of a mile astern. I increased the speed now, and then increased it again; and in a few minutes we were going sixteen knots, steering directly for the narrow entrance, and headed at a light reddish fog, which limited the distance we could see ahead, but which receded exactly as rapidly from us as we advanced toward it.

All that day the most magnificent panorama the world contains passed before us on both sides at a speed of

sixteen knots an hour as we steamed by glaciers and mountains and cliffs and forests and around bold promontories, sometimes in bright, clear air, and sometimes in brief snow-storms. At exactly nine o'clock we anchored at Punta Arenas, which the English call Sandy Point.

The next morning I sent a boat ashore for the American consul, and he came off to call. He was a delightful, breezy old gentleman, who told me the first time he met me (and at least thirteen times afterward) that he was descended from "Mad Anthony Wayne" and that his last post had been in the Falkland Islands. He said that the Americans on shore wanted to give us a ball, and he asked if the captains and officers would accept it. I told him that we should be delighted, and he went ashore to make arrangements.

Shortly afterward he sent back a message to the ship, asking if he could have the bands on the two ships to play at the ball. I sent back word that I should be delighted to send them. Then he sent off a message, asking if he could have some flags with which to decorate the room. I answered, "Certainly." Then he sent off a message, asking if I would send some sailors ashore to hang the flags and arrange the room. I agreed to this. Then he sent off a message, asking if he could have two hundred camp-chairs for the guests to sit on. I agreed. Then he sent off a message, asking if I would send some carpenters ashore to plane off the floor and otherwise improve the room. I agreed. Then he sent off a message, asking if he could borrow a lot of crockery for the supper. I agreed. Then he sent off a message, asking to borrow the silver presented to both ships, especially the punch-bowls.

Finally the ball occurred, and it was extremely pleasant. The people in that region were evidently healthy, and did not have the opportunity of going to many balls, for they started dancing about nine o'clock and kept it up until almost morning, everybody seeming to dance

almost every dance. One of the most indefatigable was the American consul, who was seventy years old.

That evening I met an agreeable lady who asked me to come next day to the christening of her youngest child, who was named Decima, because she was the tenth. I went to the christening, and found a pleasant party assembled in a well-appointed house, with all the accompaniments of wealth and taste. I met a particularly charming lady there who was perhaps thirty-five years old, and who was specially refined and gracious in dress and manner and general appearance. Feeling a little surprised at meeting there a lady whom I would not have been surprised at meeting in Paris or New York, but thinking that possibly she might be a recent comer, I asked her where she came from. She answered, with a smile, that she came from Tierra del Fuego. I said that I had heard that Tierra del Fuego was inhabited by people of the lowest order of civilization that could be found in the world, and asked her how it happened that she came from such a place. She answered that within the last few years there had been a tremendous influx into Tierra del Fuego of young Englishmen, who saw an opportunity to make their fortunes in raising sheep and selling wool; that her husband had been a poor young lawyer in London, with no chance at all of accomplishing much, but that now he was a prosperous sheep-raiser and getting rich with great rapidity.

We found waiting for us at Sandy Point a British collier, sent to coal us. After coaling us, the captain came into my cabin, the night before we left, to receive written orders from me as to where he was to go next. After this had been done, we got into conversation, and I found that he was in the employ of the Gowers in England, and was very well acquainted with Mrs. Gower, who was a cousin of my wife.

We got under way one cold morning, and steamed rapidly to the northward and eastward, toward the Atlantic Ocean. Then we headed toward the north and

steamed for Maldonado, rolling heavily to starboard and to port in the long southwest swells that are characteristic of those regions.

In the Strait of Magellan, and for some distance to the north, we were accompanied by huge albatrosses. They were so big, would fly so close, and keep so even with the ship without apparent effort, that we would watch them for hours, trying to solve the mystery of their flight. At this time the *aéroplane* had become an assured success, and these albatrosses so impressed me with the possibilities that human flight had before it that I resolved that I would study up that subject as soon as I got an opportunity. I realized that *aéroplanes* had "come to stay," and that they would get larger and larger, and that then the great speed of which they were capable would make them of tremendous value in war to any nation that had the foresight to develop their possibilities *in time*.

About the middle of April we arrived at Maldonado and found Admiral Staunton waiting for us with the *Montana* and *North Carolina*. There was a British ship stationed there, and I soon struck up a pleasant acquaintance with her captain. He was a splendid fellow of the British type, and I remember how delighted he was with the place, because there was so much opportunity for the officers and men to take long walks, go swimming and fishing, and indulge in the other outdoor sports that Britons love.

Staunton made me chief of staff of his special service squadron, and I remember a distinctly stiff and formal call that we made, under the chaperonage of the American minister, upon the President of Uruguay.

The reason for the special service squadron being in this part of the world was the centennial celebration which the Argentine Government was about to hold. The American ships drew too much water to go up the River Plata to Buenos Aires, and so we went to Puerto Militar, a military and naval port near Bahia Blanca, in

the southern end of Argentina. On the latter part of the day before we arrived I was stricken with a backache that was enormous; at least so it seemed to me. It got worse and worse during the day, and I came near to sending for the doctor; but as I had kept off the sick list during the entire cruise, I determined to fight it out. I said to myself that we would not get to our anchorage until the following morning, and that after I had made my report to the admiral at eight o'clock that evening, I would go to bed. I was in the chart-house at eight o'clock, and was just about to go below to report to the admiral when he came into the chart-house. It was a miserable night, wet and cold; just the worst night for a backache. I made my report to the admiral, and then, to my horror, he started a conversation about the coming ceremonies, of such a kind that I could not go below without telling him that I did not feel well; and this I did not want to do. The pain in my back grew worse and worse, until finally, about five minutes before twelve, it left me altogether. It has not yet returned.

From Puerto Militar to Buenos Aires is about four hundred miles. The Argentine Government asked the admiral to go there with the captains, and to send as many sailors as he could spare to take part in the parade and other ceremonies.

I went with the other captains, and after almost freezing to death in the European style of sleeping-car, we arrived at Buenos Aires. We were met at the railroad station by officers detailed for the purpose, and escorted to our rooms in the principal hotel. Each captain had a fine room and a private bath, and the admiral had a parlor besides. We were told that we were to stay at the hotel for ten days as the guests of the Government, and requested to order anything we wanted, including automobiles and wine.

I have never seen such lavish entertainment as in Buenos Aires during those ten days. Buenos Aires reminded us of Paris, except that the people were bigger,

each family averaged about eight children, and there were no signs of poverty. A Portuguese officer said to me, "In Buenos Aires there are a million people, all rich." The city was decorated with flags that delighted the eye by day, and with electric-lights that delighted the eye by night. The very handsome American Minister, Mr. Charles H. Sherill, was evidently persona gratissima to the people, and they made us think that we were also. Besides a beautiful dinner and dance at the minister's house, the social incidents that I remember the most clearly were the dinner given by the president, the afternoon at the jockey club, and one evening at the Teatro Colon.

The dinner given by the president was in a large official building. There was a great strike going on at the time, and the military had virtually taken charge of the city; so that it was a little disconcerting, immediately after our arrival in the reception-room on the first floor of the building, to have all the electric lights suddenly go out and leave us in almost total darkness. In about ten minutes, however, lighted candles were brought; and by the dim light they gave we threaded our way along what seemed like interminable corridors. Suddenly the electric lights flashed up again, and then they went out. After about ten minutes they lighted themselves again, and then went out. Finally they settled down to good behavior, and we had an admirable dinner. Each guest at the dinner received a medal about twice the size of a twenty-dollar gold piece, which, we were told, was of gold, but with only half as much gold in it as is in the usual coin.

The scene at the jockey club was exhilarating and magnificent, made so largely by that touch of military splendor which only nations of military character know how to give. I had never been at any of the military reviews in France or Germany, and as my experience with race-track events was confined to events like those in the United States, Hong-Kong, and Shanghai, I was nat-

urally impressed with the dash and precision and beauty with which the proceedings were carried on.

We were invited to two performances at the Teatro Colon, the opera-house, each captain having a small box which would hold himself and three other officers. I remember that the first night the opera was "Rigoletto," and I remember that, when the performance was about half finished, the guests, of whom I was one, were invited to the supper-room, where an extremely elaborate supper was served, and where we were presented to the Infanta of Spain.

Whenever I think of the Argentine Centennial, I smell champagne.

Toward the close of our stay the president reviewed the Argentine fleet at a place some miles down the river. The invited guests went down in river steamers, and were surprised at the excellent showing the Argentine ships made, and the precision and effectiveness with which all the proceedings of the day were carried out. One of the incidents was a boat-race in which all the vessels took part, both Argentine and foreign. The race was won by the Japanese.

On the way back in the steamer that evening I was saluted by a middle-aged Japanese officer, who made some pertinent remark. This led to conversation, and we walked up and down the deck for some time. Finally he stopped, drew himself up with a military salute, bowed, and departed. About five minutes after that, chancing to walk on another part of the deck, I saw that Japanese officer sitting down in a corner, writing rapidly in a note-book.

From Puerto Militar we went to Montevideo, and from there we went to Rio Janeiro.

We anchored in the beautiful bay of Rio Janeiro on a bright, warm afternoon about the first of June. The harbor of Rio is beautiful, but not so beautiful as the pictures of it indicate, because of the muddy color of the water, and the numerous patches of bare yellow soil,

especially on the eastern side. The city is handsome in parts, especially the new parts; and its cleanliness in later years, since the yellow fever danger was located in the mosquito, has become quite painful.

The four ships anchored in column near the *Minas Geraes*, the newest battle-ship that the Brazilian Navy had acquired. We had come to think that our big 15,000-ton armored cruisers were very fine; but here was a battleship of 27,000 tons displacement.

We were entertained delightfully by the naval authorities. The pleasantest occasion was a trip taken in automobiles far up into the mountains. Before going up there, I had concluded that the harbor of Rio was not so beautiful in point of natural scenery as the harbor of New York; but after going up into the mountains, and seeing the different magnificent views from them, I realized, as we all did, that no part of the world that we had ever been in was so beautiful as the environs of Rio de Janeiro. The way up was very steep, and a great deal of it lay over roads that had been made at the cost of the lives of many men, many years before. It seemed incredible that men could have made such roads with the crude engineering facilities that existed at the time when they were made. The only explanation was that thousands and thousands of men had been worked like beasts under the lash of the conqueror.

We had expected to get back to Rio by early afternoon, and have lunch there, but hour succeeded hour, and we kept heading away from Rio! I was becoming alarmed at the prospect of starving to death in the mountains, when suddenly we reached a clearing three or four acres in extent, where we saw luncheon-tables spread under gigantic trees.

I have never had a more sumptuous lunch at Delmonico's or the Plaza. Everything had been brought up from Rio in refrigerating-cars (except the waiters), and everything had been provided and thought of in advance. As we sat at our tables under enormous Brazilian trees, and

looked out over a landscape that included many miles of sea and mountain, the situation seemed incongruous. Things were a little formal, however; for the Americans and Brazilians did not know each other very well, nor did either speak well the other's language. At length an officer who sat on my left, and who was the executive officer of the *Minas Geraes*, sprang to his feet and raised a champagne-glass above his head: "Oh, dis is doo damn stupid!" he cried. "I vish to make things more cheerful! Hooray! hooray! hooray!" We all joined in the hoorays, and after that we were more congenial.

At Rio we had the honor of meeting a man who was a statesman in the real sense of that much prostituted word. This was the Baron Rio Branco, the secretary of state of the Republic of Brazil. It was common talk that he could have been president at any time for many years if he had so desired; but that he preferred to be secretary of state, knowing that that was really what he ought to be, and that that was the position in which he could be the most useful to his country. The common phrase in speaking of him was "he has rendered enormous services." People through the country appreciated what he had done, and honored him for it.

One of the small peculiarities connected with him that struck me curiously was the seeming lack of orderliness in the large room which he occupied as his office. One of his secretaries told me that although papers were strewn about the room and piled in heaps in what looked like hopeless confusion, yet that the minister knew where every paper was; and that although they had often tried to induce him to let them adopt modern methods of recording and filing papers, they had been unable to wean him from the habit which had grown on him during all of his official life.

On our way north we stopped at Culebra. I remember the officer who was in command there telling me that he was suffering from what he called "Culebritis," an intense weariness of the monotonous life, and especially

of the uninterrupted succession of bright, sunshiny days.

From Culebra we went to Hampton Roads, and thence to the southern drill grounds, where we held our day and night target-practice.

On the day after anchoring at Hampton Roads, I received a letter from Rear-Admiral Wainwright, the aid for operations, saying that Admiral Dewey and he would like to have me become a member of the General Board, in the place of Captain Knapp. I was overjoyed at receiving this letter, because duty on the General Board was the best possible duty a captain could have on shore, especially if he cherished aspiration toward flying his flag afloat. For an officer to be made a member of the General Board was to have the stamp of official approval put on him; for Admiral Dewey was more than careful as to whom he allowed to become a member of the board.

So I answered the letter at once, saying that I should consider it an honor to become a member of the General Board. In a few days Captain Harry S. Knapp, the most popular officer in the navy, reported on board as my relief. That afternoon I was pulled ashore in my gig by a volunteer crew of chief petty officers in a half gale of wind and a driving rain.

CHAPTER XXXI

THE GENERAL BOARD, AERONAUTICS, AND NAVAL POWER

I WENT at once to Greenwich, Connecticut, where my little family was staying at the Edgewood Hotel; and from there in a few days we went to Newport, where the General Board was in session at the war college.

The General Board had a large room with clerical offices attached, and I soon fell into step with the work. It was of the most interesting kind possible, and I found that it was carried on with the most remarkable absence of anything like personal self-seeking. There were eight officers on the board, and each of these had a commander or lieutenant-commander as assistant, who had no vote in the deliberations of the board. The aim of every man seemed merely to be to find out and urge whatever was best for the navy, and it was considered a virtue in a man to be willing to say that he had made a mistake and to change his opinion on proper evidence. Nothing was considered more deplorable than pride of opinion.

On the first of October the General Board went to Washington and resumed its work in its large rooms in the Mills Building, near the Navy Department. Admiral Dewey did not go to Newport in the summers, but he always met the board on or about the first of October in Washington.

I went with my family to Washington, and engaged a pleasant apartment in Stoneleigh Court. We enjoyed the Washington winter tremendously, with its round of simple entertainments among friends, and splendid entertainments in the official circles, and the general air of leisure and cleanliness and quiet.

When I first became a member of the board, the duty to which I was specially assigned was that of material,—that is, the general subject of ships, guns, etc.,—but about the first of December “Tommy” Howard was promoted to the grade of rear-admiral and given command of a division in the fleet, and I was promoted to take charge of his section, which was the section that dealt with war plans. On this section I had two assistants, Commander Hoogewerff and Lieutenant-Commander Madison.

I gradually realized, to my disappointment, that the war plans of the General Board were so general in character as hardly to be war plans at all, and to consist mainly of information of all kinds concerning various countries, accompanied with suggestions for the commander-in-chief of the fleet. I found, also, that the work of the General Board was much less influential in guiding the strategy of the navy than I had supposed. I knew that the General Board had no legal status, and that its functions were advisory only; but I had not known before how uncertain was its hold upon the navy, and how careful Admiral Dewey had to be in regard to the attitude of the General Board toward the Navy Department lest the General Board be abolished altogether. When I reached Washington on the first of October, 1910, the General Board had been in existence about eight years. There had always been some jealousy of it on the part of the bureau chiefs, each of whom, with an occasional exception here and there, had resented any suggestion of the General Board which seemed to him to interfere in any way with his prerogatives as chief of bureau. Secretary Meyer was said to be heartily in favor of the General Board, because he found that it was of great assistance to him in making recommendations along lines with which he could not be familiar, and which he did not have time to study. This was a great advantage; but it was not so great an advantage as it might seem to be, from the fact that the bureau chiefs were the assistants of the secre-

tary by law, whereas the General Board did not exist by law at all. Two of the four aids, Rear-Admiral Wainwright and Captain F. F. Fletcher, who had succeeded Admiral Swift as "Aid for Material," were members of the General Board; and because of this, and because of the unanimity of purpose of the aids and the General Board, the two organizations got on together extremely well. Admiral Dewey, of course, was the paramount figure on the board; in fact, without his prestige the board could not have survived. Admiral Dewey handled the board with exceeding skill, keeping himself in the background and never taking part in any discussions, but nevertheless keeping a tight rein, which all of us felt, though none of us saw. One day he came into my room, where I was discussing a matter with some officers, and said, with that pleasant lack of dignity which he sometimes assumed, "Fiske is just like a midshipman; he takes his hands out of his pockets whenever he sees me coming."

In conformity with the promise which I had made to myself in the Strait of Magellan, I took up the study of aeronautics shortly after reaching Washington. There was not much to learn then for a man who had the knowledge of mechanics that I had gradually acquired in my experience as inventor and navy officer; in fact, I was surprised to find how little there was to learn, and how little had been done, especially by armies and navies, and especially by our army and navy. Some years afterward Lord Northcliffe told me that he was with the Wright Brothers a great deal when they first went to Europe after they had made their memorable flight in 1903, and that the only government that took up the matter very seriously was the Italian Government. He added that the German Government was not very far behind, but that the British and French governments were immeasurably so.

I had never known much about war plans before joining the General Board, but I had supposed that war

plans were of the kind concerning which the story was told (and believed) that when the war broke out between France and Prussia, and Moltke was wakened one night and informed officially that war had been declared, he roused himself to say that the plans and orders could be found in a certain drawer in a certain desk, and then turned over in bed and went to sleep. To my surprise, I could find no such plans or any project for making any. As I was the head of the section on war plans, that duty seemed to devolve upon me; but I realized that I was wholly unequal to a task that required the very highest qualities of strategic knowledge and ability. I knew nothing whatever about making war plans. I had been a good captain of a ship, but as captain of a ship I had been merely carrying out duties for which I had been educated during a naval career of nearly forty years. I had not been educated in making war plans, and I did not know anybody who had. The man who came the closest to knowing about things of that kind was Captain T. M. Potts, who was chief intelligence officer of the navy, and member of the board, and who had served for three years in Germany as naval attaché. Potts told me that the German Naval General Staff, like the German Army General Staff, kept a score or more of officers at work making war plans, and that these officers had been specially selected for the task and trained for it afterward during many years. He told me that the General Staff not only made out war plans, but also, as accessory to the war plans, made plans which covered all the tactical and strategical drills and manœuvres of the fleet; and that, when these tactical and strategical drills and manœuvres were carried out by the fleet, certain members of the General Staff would go out with the fleet as observers, and note how their plans were being carried out, for the double purpose of noting and comparing the degrees of skill of the various officers and of seeing where the drills could be altered and improved.

After my conversations with Potts, I came to feel that

though the system of training of our officers was good it had not advanced far enough. It looked to me a case of arrested development. It seemed to me that the navy had progressed up to a certain point and then ceased to progress, or at least that it had ceased to progress as far as the German Navy had. This was an explanation to me of why we had tactical drills in the fleet, but did not have fleet tactics.

In thinking about the possibilities of *aéronautics* and the fact that our so called "war plans" seemed to contain no definite plan for doing any definite thing, I suddenly saw what seemed to me a way to making a distinct suggestion. At this time it was supposed that, in case war broke out with Japan, the Japanese would immediately take possession of the Philippine Islands by landing a very large force of men upon the unprotected shores of the island of Luzón; and that the United States would then have to send out a tremendous fleet to fight the Japanese fleet in its home waters, as Russia had done six years before. That prospect was far from alluring, and so the idea which came to me seemed not bad in the circumstances. My idea was to prevent the Japanese from landing at all by using *aéroplanes* against them while they were trying to land. I pointed out to myself that the Japanese would have to send any invading party in a large number of lightly constructed transports; that when those transports got near the coasts of Luzón, they would have to stop and get out large numbers of boats, and bring those boats alongside the transports; that they would then have to fill those boats with troops, equipments, ammunition, and arms of different sorts; that those heavily filled boats would then have to be towed very slowly toward the shore in some place where the water was smooth; that those boats would then have to be discharged on the beach; and that during all that time the boats and the transports would be almost perfectly helpless, especially the boats, if large numbers of *aéroplanes* hovered over them and dropped bombs upon them.



Photo, Clindinst

To Admiral B. G. Fiske & S. R.
 from his sincere friend
 Oct. 11. J. J. Deering

I talked over this matter with Admiral Dewey and certain members of the board individually, and most of them seemed to think that the idea was worth proposing. So I brought it up one day before a meeting of the board; but the Aid for Operations became so extremely emphatic in his protest against taking up the time of the General Board with "wild-cat schemes" that I had to give it up for the time being.

My scheme comprehended the establishment on the Island of Luzón of four aëronautic stations, each of which should be fitted with at least a hundred aëroplanes, with the proper personnel and equipment. I proposed this scheme in the winter of 1910 and 1911. *I think this was the first proposal for using aëroplanes for major operations.*

Of course aëroplanes were so used, and with great success, in the great war, and I have always thought it unfortunate that my recommendation was not adopted by the board. If it had been adopted then, Secretary Meyer would undoubtedly have backed it, and with it the utilization and development of aëronautics; and recent history might have been different from what it has been. In fact, it would have been different, very different; so different, that the United States would have entered the great war, prepared to render *immediate* service of the most important kind and hasten greatly the winning of the war.

Throughout my cruise in the *Tennessee* I had had my range-finder on the forward turret, and had used it on all occasions when practicable; but the engrossing nature of my duties had prevented me from paying much attention to it, especially at target-practice. I had become more and more convinced, however, of the excellence of the scheme which I had patented of having a "combined range-finder and turret," and had determined to take up the plan seriously as soon as I should get on shore again. I saw, however, that in order to get the best results, I should have to make some changes in mechanical de-

tails, and possibly to reconstruct the actual instrument. Imagine my feelings when I found out as soon as I took up my duties on shore that the fire-control board had recommended that a turret range-finder be built into one of the turrets of the *New York*, which was then about half-way finished, and that later battle-ships also should be fitted with turret range-finders in case the one in the *New York* proved to be a success! It did prove to be a success, and all battle-ships constructed since then have been fitted with turret range-finders. Besides recommending the adoption of the turret range-finder, the board also recommended the adoption of the plotting system which I had suggested in my essay, called "Courage and Prudence," three years before.

This made me feel that I had not lived in vain, for two important inventions of mine had just been adopted. So, though my humble name was not mentioned in connection with either of them, and though my pioneer experiments with one of them had cost me more than six thousand dollars, I was content.

I had also made up my mind to make a new and enlarged horizometer as soon as I should get on shore. While making the passage from Bremerton to Hampton Roads, I made a careful design of an instrument, and shortly after my arrival in Washington I engaged the John A. Brashear Company of Pittsburgh to construct it. They made a very handsome instrument, but my experiments with it were not completed when I went to sea in October the following year. So I took it with me to the *Washington* when the *Washington* became my flag-ship.

But the main occupation of my leisure hours on the long sea-trip on the *Tennessee* was pondering on the theory which I had conceived, that navies and armies are merely applications and developments of savage weapons, of which the earliest was the club. I had to work entirely under my own guidance, for I found my-

self in a field that seemed entirely new. I had not finished my endeavor to express my theory in an essay, when I reached Hampton Roads, but I continued to work on it during the autumn. I did not succeed as well as I had hoped, but I finally produced a fairly coherent essay, which I called "Naval Power." When I finally stopped work on it, it was not because I was quite satisfied, but because the competition in which I desired to enter it closed on December 31. When I sent it in, I realized that I was making an attempt that was rather dangerous for a member of the General Board to make, because it was not altogether orthodox. I realized, however, that I could not justly be accused of trying to spread a doctrine which had been disapproved, for the simple reason that the doctrine I was suggesting was entirely new.

The essay began by pointing out how much influence Mahan's books had had in inducing nations to enlarge their navies; but showed that the sea power which Mahan wrote about was not really sea power, but naval power, and that the effect of a merchant marine was not to increase the power of a navy except in the way in which all sources of wealth in a nation increased it; but to act primarily as a responsibility, and therefore a handicap. I showed also that, while the idea in most people's minds of naval power is extremely vague, and, in fact, that "naval power" exists only as a phrase in most men's consciousness, yet that nevertheless naval power was a distinct and tangible thing, because it was merely mechanical power. I showed also the practical value of realizing that it was mechanical power, because that realization made the subject a concrete subject instead of an abstract subject, and pointed out a clear line along which to work when endeavoring to improve our navy.

I showed also that naval power had two attributes which mechanical power always requires for its proper management, and which I called "controllability and di-

rectability." If this be granted, the analogy between a fleet and the club wielded by Cain, or by any other savage, stands out clear.

Proceeding on the basis that armies and navies are effective because they exert mechanical power, I showed that a navy must be more powerful than an army, because the floating properties of water make it possible to move larger masses over water than can be moved over land. Figuring out the mechanical power of a ship and of an army in terms of the masses moved and the velocity with which they are moved, I showed that a battle-ship like the *Arkansas* was more powerful than an army of six hundred thousand men.

After discussing the nature of naval power, my essay discussed the primary use of a navy. My idea was to point out that, in order to defend the United States, it would not be sufficient to defend her from absolute invasion, because it was necessary to defend it from blockade as well. The essay pointed out that *the primary use of the navy is to defend our great sea-ports from blockade*; and also that the injury which a blockade could inflict on the United States was very great indeed. The reason why it could inflict great injury was that the United States was not primarily an agricultural country, but an industrial country, the whole system of which had become highly complicated, and every part of which depended on every other part. Concerning the interdependence of parts, one paragraph read:

The organization for effecting this is so excellent and so wonderful, that it is like a machine. In fact it is a machine, and with all the faults of a machine. Now one of the faults of a machine, a fault which increases in importance with the complexity of the machine, is the enormous disturbance which may be produced by a cause seemingly trivial.

The tremendous disturbance which would be produced by a blockade of our coast was then analyzed and described, and it was pointed out that a great part of the

effect would be caused simply by the *suddenness* of the change which would be brought about. One paragraph read:

The sudden stoppage of our sea trade, including our coasting trade, by even a partial blockade of our ports, would change practically all the conditions under which we live. There is hardly a single organization in the country which would not be affected by it.

Another paragraph read:

It will be seen, therefore, that the blockading of the principal ports of any purely commercial country would be a disaster so great that there could not be a greater one, except actual invasion.

The essay then pointed out that the most effective single agency that saved the Union in our Civil War was not the army, but the navy; or, more strictly speaking, the navy's blockade of the Southern coast, which made it impossible for the Confederacy to keep its army adequately armed, provisioned and equipped.

The essay then proceeded to point out the danger of having our navy drop behind the navies of other great countries, not only because a powerful navy is a defense in war, but because it is a preventive of war. One sentence ran, "Other factors being equal, *the greatest probability of war is between two countries of which one is the more wealthy and the other the more powerful.*" Another sentence ran, "*The most pregnant cause of war is the combination of conflicting interests with disparity in power.*"

Another sentence read:

We must realize that it is not enough to consider the situation as it is now; but it is necessary to look at least ten years ahead; because it will take the United States that length of time to prepare a navy powerful enough to fight our possible foes with reasonable assurance of success.

Of course, this did not mean that it would require ten years to build the ships, and other material. That would be a manufacturing job which could, if necessary, be accomplished in perhaps a quarter of the time. It meant that it would take ten years at least to produce a navy which not only was large enough materially, but which had *within itself* the means for handling itself skilfully. I knew, of course, as a naval officer, that the most difficult problem before a navy is not material, but mental and spiritual.

Ships and guns no more make a navy than bones and muscles make a man. The difficult part about making a good navy is not to make its ships and guns, any more than the difficult part about making a good man is to make his bones and muscles. Furthermore, the larger a navy becomes, and the more highly its various units are specialized, the more difficult becomes the problem of handling it skilfully. A navy is merely a development of the club. Cain could learn to use his club skilfully in a very short time. The spear that followed the club, and the bow and arrow that followed the spear, and all the weapons that have been successfully developed as civilization has advanced, have become increasingly difficult, not to handle, but to handle *with skill*.

It may be pointed out here that the more highly developed instruments have become, the easier it often is to handle them, but the more difficult to handle them *with skill*. It is easier to actuate the most elaborate pipe-organ, for instance, than it is to actuate a flute, but it is more difficult to handle it *with skill*. The ease with which large and highly efficient instruments like, say, a navy can be handled, has misled many people into supposing that it is easy to handle them with skill; whereas the contrary is the case.

It is easier to handle a navy than a club, because one has simply to give orders; but it is more difficult to handle a navy skilfully than it is to handle a club skilfully.

The essay was then devoted to showing that the neces-

sity of naval power to a country like the United States would increase as her trade increased, and that the development of mechanism was going to bring about a world-wide race for wealth, which would bring about world-wide causes of friction and possible war. It pointed out the inability of any kind of schemes of arbitration to prevent war *forever*, and showed that, when war finally did come to a country, the difference between prosperity and disaster would rest wholly on the outcome of the war. One paragraph read:

This does not mean that the United States ought, as a matter either of ethics or of policy, to build a great navy, in order to take unjust advantage of weaker nations; but it does mean that she ought to build a navy great enough to save her from being shorn of her wealth and glory by simple force, as France was shorn in 1871.

The essay then combatted the theory that a great navy was not needed for the United States, and that it was needed for countries like Great Britain only to prevent them from starving. It pointed out that, while it was true that Great Britain did need a navy to prevent the starvation of her people in case of war, yet the inference usually drawn was fallacious; the inference that, if Great Britain were not situated as she is, she would not have so great a navy. Another paragraph read as follows:

The main reason for Great Britain's having a powerful navy applies with exact equality to the United States. Now that Great Britain has proved how great a navy is best for her, we can see at once how great a navy is best for us. That is,—since Great Britain and the United States are the wealthiest countries in the world, and since the probability of war between any two countries is least when their navies are equal in power, the maximum good would be attained by making the United States navy exactly equal to the British navy.

I think that this was the first declaration ever published of a doctrine that now has many advocates.

In the middle of February the *Naval Institute* an-

nounced that my essay had received "honorable mention." The first prize went to a paymaster for an essay on "Navy Yard Economy."

My essay attracted almost no attention whatever, though it was copied and translated in some foreign service magazines. Most officers whom I met seemed inclined to smile at it, and not to take it very seriously, especially the mechanical analogy. One part that I had feared might arouse the disapproval of the General Board—the part saying that the primary use of the navy was to prevent blockade—was accepted without much comment.

Five years later Mr. Waldemar Kaempffert, editor of the *Popular Science Monthly*, asked me to rewrite that part of my essay which pointed out the superior power of navies as compared with armies, bringing the figures up to date, and to contribute it to his magazine, as he wished to call attention to the desirability of building up our navy. With the consent of the *Naval Institute* I did this. The number for October, 1915, of the *Popular Science Monthly* published this article very prominently, headed it in large type, "If Battleships Ran on Land," and illustrated it with a full-page picture showing a battle-ship running on wheels over New York and knocking down the buildings. One paragraph ran as follows:

Inherent Power of a Battleship.—Possibly the declaration may be accepted now that a battleship of 30,000 tons, such as the navies are building now, with, say, twelve 14-inch guns, is a greater example of power, under absolute direction and control, than anything else existing; and that the main reason is the concentration of a tremendous amount of mechanical energy in a very small space, all made available by certain properties of water. Nothing like a ship can be made to run on shore; but if an automobile could be constructed, carrying twelve 14-inch guns, twenty-two 5-inch guns, and four torpedo-tubes, of the size of the *Pennsylvania*, and with her armor, able to run over the land in any direction at 20 knots, propelled by engines of 31,000 horse-power, it could whip an army of a million men just as quickly as it could get hold of its component parts. Such

a machine could start at one end of an army and go through to the other, like a mowing-machine through a field of wheat; and knock down all the buildings in New York afterward, smash all the cars, break down all the bridges, and sink all the shipping.

This article attracted considerable attention in England from the military papers and others. The British "tanks," or "land battle-ships," appeared in somewhat less than a year afterward.

Shortly after I arrived in Washington, and while I was finishing my essay, Captain Dion Williams of the Marine Corps told me that he had narrated many times the story of my picking up a man at sea in the *Minneapolis*, but that nobody would believe it; and he said he wished that I would write something verifying the story. So I wrote a short article describing it, which I called, "An Unprecedented Rescue," and the *Naval Institute* published it six months before it published my essay. The story aroused the greatest interest everywhere, and was read by probably a thousand times more people than read the essay. I took one day to write the story, and ten months to write the essay.

In the spring of 1911, seeing that I would probably be promoted to rear-admiral during the coming summer, I made official application to be ordered to take command of a division in the fleet as soon as the first vacancy should occur.

Sometime in May I was asked by the Alumni Association of the Naval Academy to deliver the principal speech at the annual dinner in June in reply to the toast, "The Navy."

I accepted the invitation with pleasure, because it gave me an opportunity to point out some things about the navy that were sometimes overlooked. One paragraph in my address was as follows:

Navies preserve the peace, not among individuals, but among the nations; and on board of their own ships they set the best

example of peaceful living. Peace is the absence of strife; and how can there be much strife on board a ship of war, where Law and Justice reign together, where no opportunity for commercial fraud or oppression can exist, where the daily life is arduous and healthful, where every one's status is defined, and every one's rights respected?

The intention of this paragraph was to point out that the accusations which politicians were constantly making against armies and navies, that the military life (militarism) is an instrument of oppression and a cause of misery, are absolutely false. The two last paragraphs were as follows:

How clear it is that the tremendous progress in civilization which steam and electricity brought to Europe and America, is now spreading rapidly over all the lands and oceans; how clear that countries now ignored will soon demand a hearing; how clear that the desirable portions of the earth are very unequally divided among the nations, as regards both possession and control; that Germany is not content with only a million square miles and Japan with only two hundred thousand, when Great Britain has more than eleven million; how clear that Germany and Japan and China are gathering strength to burst their bonds; how clear that the problem of living peacefully together has been solved on only a microscopic scale; how clear that the struggles between individuals, tribes and nations must still go on, but on wider fields; how clear that wars between small states are soon to be supplanted by wars between vast races.

We, the people of the United States, must realize all this. We must refuse to listen to false prophets who prophesy smooth things proved impossible by history. We must not forget, in the immediate family of kindred countries, that many discontented nations and many alien races are around us. We must look to the future of all the world, and not to only a little part; we must hold fast to the ideals that made this country great; we must keep alive our military spirit. If we do not, we shall lose everything for which our fathers fought, and take our place among the degenerate nations of the earth.

I went that summer with the General Board to the war college at Newport, but lived at the Bay View Hotel in Jamestown, opposite. In the early part of August I was ordered for examination for promotion. At this time there were only two men left in my class of thirty, Bowyer and I, and Bowyer was in such bad health that it was sure that he could not be promoted. I was so fortunate to pass my examination without difficulty. After I had passed it, I felt a profound sense of gratitude and humility, with a curious mixture of incredulity, that of all the thirty men who stood up on graduation day thirty-seven years before, I, who was the slightest man in all the class, and whose performance during the final year at the academy had been most unofficer-like, should be the only one to become a rear-admiral.

I returned to Newport and to my pleasant quarters at the Bay View Hotel. The following evening, when I went down to the dining-room, I found the entire population of the hotel waiting for me in the hall outside. I was made to feel quite like a hero for about five minutes.

As Rear-Admiral Wainwright, the President of the United States Naval Institute, was to retire in December, and it was known that Rear-Admiral Vreeland was to succeed him as aid for operations, there was a movement started in Washington to get Vreeland elected as president of the institute at the annual election in October, and I joined in the movement. When the result of the election was announced, I read in the *Washington Post* on October 14 that I had been elected! I was more than surprised, for I had had no expectation of receiving any such honor, and nobody had intimated to me that I was even being thought of for the office. Nevertheless, I was delighted.

About the first of October I received my coveted orders to take command of a division in the fleet. At eleven o'clock on October 21, 1911, I stood on the quarter-deck of the *U. S. S. Washington* and read my orders to assume command of the fifth division. Then my two-starred flag

was broken at the masthead, and the guns of the ships in the harbor fired thirteen-gun salutes.

As I descended to the cabin from the deck, I found myself repeating the translation of a sentence I had read in some paper written by some Frenchman, "To most naval officers the stars of an admiral are as unattainable as the stars of the sky."

CHAPTER XXXII

COMMANDING THE FIFTH DIVISION

MY division consisted of the *Washington*, *Tennessee*, *North Carolina*, and *Montana*, the same ships that Admiral Staunton had commanded, except that the *Washington* had taken the place of the *South Dakota*. Almost immediately after assuming command, I had to take my division to New York and to join the North Atlantic Fleet, under Rear-Admiral Osterhaus, in the review which was held during the last few days of October in the Hudson River. The review made a display nine miles long, and was said to be a spectacle that had been exceeded only by the International Armada, which had been recently assembled in Great Britain to celebrate the coronation of King George V. The fleet aroused tremendous attention not only from the people in New York, but from the press of the entire country, and the newspapers quoted liberally from my essay on naval power in order to impress the public with the enormous amount of power of which the pageant was an illustration.

As commander of a division, I was allowed a flag-lieutenant and a flag-secretary, in addition to a certain clerical force. I selected as flag-lieutenant, Lieutenant Frank Russell, who had been my range-finder midshipman in the *Tennessee*; and I selected as flag-secretary, Lieutenant C. C. Gill. It had been the custom of flag-officers to select for these positions handsome young bachelors in order to enhance the beauty of ceremonial occasions, especially those of a social kind; but I selected two extremely staid and serious married men, and I never regretted my selection. Russell and Gill did extremely efficient service on my staff, and have continued to do efficient service ever since.

After the review in New York, Osterhaus took the fleet

to Hampton Roads, and thence out to sea, on different occasions, for tactical drills. On one of these occasions I had to send a ship by wireless orders to a position some miles distant and out of sight, and shortly afterward to call her back. This was the first time that I had ever given orders by wireless, and I shall never forget the almost awe-struck feeling that I had, when, after telling the flag-lieutenant to call the *North Carolina* back, she then being several miles beyond the horizon, I saw the tops of her masts half an hour afterward appear above the horizon, and shortly afterward beheld the entire vessel, with white foam at her bow, dashing forward to rejoin us.

During one of the forenoon drills I received an order to proceed to Hampton Roads immediately with the *Washington* and *North Carolina*, and get ready to go to San Domingo, taking the American Minister with me on board the *Washington*.

I left the column at once with my two ships, and was soon at anchor on a beautiful bright afternoon in Hampton Roads. Minister W. W. Russell came on board shortly afterward, and informed me that he had been on leave in Washington, that news had been received that the President of San Domingo had been murdered one afternoon in one of the streets of San Domingo, that considerable confusion reigned there, and that he had been ordered back to ascertain and report the condition of affairs and look out for American interests, with, he said with a smile, "the assistance of Admiral Fiske."

We had a pleasant trip down, and I found Russell a delightful shipmate. He had been graduated from the naval academy a few years after me, but had resigned from the navy later and entered the diplomatic service. He had spent about fourteen years since then in Spanish American countries, and had consequently become familiar with the characteristics of Spanish-American people and with the beautiful Spanish language.

When in the neighborhood of the Bahamas, we got into a considerable gale, and I received a wireless telegraph from a merchant steamer, reporting that she had run ashore in a dangerous position, and asking for assistance. I sent the *North Carolina* to the rescue, a duty which detained her about twenty-four hours.

We arrived at San Domingo City on Sunday soon after noon, and Mr. Russell went ashore in his capacity as American Minister soon afterward. He remained away most of the afternoon, and when he returned a little before sunset he told me that the condition of affairs on shore was very serious, not so much on account of the local conditions, as because the Government and the people were excited over news that had been received to the effect that a very prominent San Domingan rebel named Horatio Vasquez, then in exile in St. Thomas, was about to head a large party, and invade San Domingo, where he had many secret supporters.

After talking the matter over with the minister, I said that perhaps the report might not be true, and that unless he had some objection, I would go at once to St. Thomas and find out what were the facts, adding that, if the report was true, I might be able to bring such pressure to bear upon the governor as to prevent the sailing of any hostile expedition from St. Thomas. I added that I expected the *Wheeling* that evening, and that I thought she could take the place of the *Washington* during the few days of my absence.

The minister said that he had no objection whatever; in fact, that he considered it a very good idea. So the *Washington* made immediate preparations for sea, and when the *Wheeling* came in late that evening, I explained the situation to her captain, Commander Brittain, and started for St. Thomas about midnight.

The next forenoon I sent a wireless message to the American consul in St. Thomas, asking him to arrange an audience for me with the governor for the following

morning, and also to arrange a meeting, if possible, with Horatio Vasquez.

I had a satisfactory audience with the governor the following forenoon, in which I described the disturbing effect which the reported activities of Vasquez were having on the people in San Domingo, and I pointed out that, as San Domingo was virtually under the protectorate of the United States, the permitting of a hostile expedition from St. Thomas against San Domingo would be almost the same thing as permitting a hostile expedition from St. Thomas against the United States. The governor was evidently impressed with the gravity of the situation as I described it, and he promised to call on me that afternoon at three o'clock and tell me then what measures he had decided on.

I then went with the consul to the consulate, accompanied by my two aids, we being, of course, in uniform. The consul told me that he had communicated with Vasquez, and had asked him to meet me at the consulate, but that he was not at all sure that Vasquez would come. He added that people living in exile, especially Spanish-Americans were extremely suspicious of everybody, and that this was not surprising. I waited for an hour, but Vasquez did not appear. I then departed, asking the consul to tell Vasquez that I should be glad to see him on board the *Washington* that afternoon, and take any message back to San Domingo that he might wish. The consul told me that he would deliver the message, but he felt absolutely sure that Vasquez would not risk his safety on board the *Washington*. He did not.

The Governor called on me that afternoon and gave me the most emphatic and earnest assurances that he had had a careful watch set on Vasquez, and that he would prevent him from setting forth on any hostile expedition from St. Thomas.

I started back to San Domingo that evening, and arrived two days later. On the morning following our departure I received a wireless message from Vasquez, say-

ing that he regretted that he had not seen me, and adding, "I am for peace." That same forenoon I sent a wireless message to the *Wheeling*, stating what had happened in St. Thomas, and directing that the information be transmitted at once to the American Minister.

On our arrival at San Domingo I found that this information had been transmitted by the minister to the Government, and by the Government to the people, and that a condition of tranquillity had been established immediately.

I reported these circumstances to the Navy Department. About a month later I received a letter in reply, and with it a copy of a letter from the State Department, which read as follows:

Department of State,
Washington,
December 22, 1911.

The Honorable

The Secretary of the Navy.

Sir:

I have the honor to acknowledge the receipt of your letter of the 15th instant, enclosing an interesting report made by the Commander of the Fifth Division of the U. S. Atlantic fleet, concerning affairs in the Dominican Republic.

I have the honor to thank you for this report, and to request that an expression of the appreciation of this Department may be conveyed to the Commanding Officer.

I have the honor to be, Sir,

Your obedient servant,

P. C. KNOX, Secretary of State.

839.00/453

After a stay of about three weeks, affairs in San Domingo reached their usual stage of apparent, but unstable, tranquillity, and the *Washington* and *North Carolina* were relieved by two gun-boats, and ordered north to Hampton Roads. On arriving, I was ordered to report to the Navy Department, to confer with the aid of operations, and when there I was told that I would receive

orders shortly to take my division to Newport to report to the commander-in-chief and take part in a fleet strategic game.

After reporting to the commander-in-chief, and receiving my instructions, I proceeded to Hampton Roads with my division; while the other division commanders went to other ports, to get ready for the game. My division started out from Hampton Roads on the afternoon of the third of January, when the weather was as beautiful as one ever saw; but Captain Peake, who had been piloting in those waters for many years, told me he saw certain signs in the air, and in the clouds, which indicated a violent northwest gale.

The next day was good, but with an increasing northwesterly wind, and when I was called at daybreak the following morning, with the report that "the enemy" had been sighted, I found that the northwesterly gale which the pilot had predicted was blowing with great violence. The enemy which was sighted proved to be the *Rhode Island*. Because of the superior speed of the *Washington*, and the fact that her comparatively sharp bow enabled her to behave better in the heavy seas than did the *Rhode Island's* bluff bow, I was able to cut off the *Rhode Island* from the rest of her force, none of which was then in sight.

The weather kept getting worse not only in the violence of the wind and the roughness of the sea, but in rain and fog. I did not see any of the other enemy ships that day, and I realized from the condition of affairs on board the *Washington* that it would not be practicable to carry out the operations as they had been planned, especially with the destroyers, for we began to receive very disturbing accounts of them by wireless. We could not see the sun, and therefore no vessel could ascertain its own position accurately, or tell the direction and distance from itself of any other vessel. That night I ran the *Washington* at a speed of thirteen knots in an endeavor to find Admiral Howard. A most uncomfortable night it

was for everybody, though we had no anxiety for the safety of any vessel except the destroyers. The *Washington*, however, had four boats badly damaged, and sustained a number of minor injuries. The following afternoon the commander-in-chief, in view of the wide dispersion of the vessels and the uncertainty of their positions, and because of the dangerous condition of some of the destroyers, was forced to abandon the game and order the ships to various rendezvous.

Our rendezvous was just north of Bermuda, and I remember a wonderful forenoon we had there, when the sea was only a little rough, and an exhilarating and abating northwest breeze was blowing. That afternoon the *Washington* and *North Carolina* started for Hampton Roads by order. We immediately got into another gale just as bad as the preceding one, and on reaching the neighborhood of Cape Henry I had to anchor my two ships on the southern drill-ground in a northeast gale and snow-storm and wait for the weather to clear.

On the following day we were able to go into Hampton Roads and anchor. Other vessels came in soon, including some destroyers, and we learned then that no destroyer had been lost, although some had been badly damaged.

I was ordered to report in person at the Navy Department. On doing so, I was told that I was to go with the *Washington* and *North Carolina* to Key West to take part in certain ceremonies there, connected with the completion of the railroad which had been laid on bridges over the Florida Keys and the water between them. I went to the Hydrographic Office to get the latest information concerning the channels and harbor of Key West, as I had not been there for many years. I had become much impressed with the strategic importance of Key West, but knew that that importance was very much lessened by the fact that the channel was narrow and the bottom was hard coral; and because of this, large vessels had not dared to enter it. I knew that during the

Spanish War all the large ships had anchored outside in open water. In talking over the matter with the hydrographer, a captain in the navy, I told him that I thought it would be a very good thing if the navy could use Key West Harbor, and that I thought I would make a systematic effort when there to find out if it could not be done. The hydrographer said that he would be very much obliged to me if I would do so, but he advised me to be very careful, because the bottom was very hard and full of hard coral lumps. I pointed out to him that the chart showed that there was enough water in the channel for the *Washington* and *North Carolina* to go right up to the city, and I said that I was thinking of risking the attempt. The hydrographer urged me very earnestly not to make the attempt, as it would be entirely too dangerous.

We arrived outside the harbor of Key West at day-break on January 21. I had sent a word to the commandant by wireless the night before, telling him that I should arrive on the following morning, and asking his advice about trying to enter the channel with my two ships. Shortly after arriving, the navy-yard tug came down with a pilot on board, who said that the commandant had told him to tell me that he would not give me any advice whatever about trying to enter the channel. My ships drew twenty-eight feet of water each, and the pilot told me that the deepest-draft vessel that had ever gone up the channel had drawn only twenty-five feet and eight inches. After some conversation with the pilot, and realizing what a fine thing it would be if I could prove that Key West could take big-draft ships, I decided to try to take the *Washington* up.

So leaving the *North Carolina* outside, I started up the channel, going as slowly as the *Washington* could go; telling the navy-yard tug to precede the *Washington*, stationing men by the water-tight doors, and taking all precautions possible. Although a very nervous man, I did not feel in the slightest degree nervous on this occasion,

although I realized that if any undiscovered coral-lump was touched, our bottom would be broken in, and I would be immediately relieved of my command and disgraced. My reasoning was that, although no other ship drawing so much water had gone up there before, yet it was virtually impossible for a channel which was so short and narrow, and which was used so much, to have in it any dangers that had not been discovered. Whether my action was justifiable or not, I am not sure. I think that it was, because of the great good that would result (and did result) from proving the harbor to be available for large ships, and because of the comparatively small danger except to my own career.

We threaded the channel, and anchored off the town in perfect safety, much to the delight of the people of the town; and the *North Carolina* followed. Since that time Key West has been continually used by large vessels. On the morning following our arrival the *Key West Citizen* published a report of our arrival, in which were the following paragraphs:

"The *Washington*, flag ship, and the *North Carolina* arrived yesterday afternoon, and the *Birmingham* came in early this morning. The arrival of these big fighting craft to take part in the celebration is of the greatest importance to this port; for the reason that the two cruisers, *North Carolina* and *Washington*, draw 28 feet of water each, and are the deepest draught vessels that have ever been brought into this harbor.

"Admiral Fiske, in addition to bringing his ships here and adding to the interest of the celebration, has done Key West a great service in demonstrating the fact that deep draught vessels can be brought into the inner harbor with safety."

After a brief stay here, we were again ordered to Hampton Roads, where we anchored in the midst of a great deal of floating ice. We were ordered from there to the Norfolk Navy-yard, to have certain alterations made in the cabins, because Secretary Knox was about to make a trip in the *Washington* to Central America. I

was given permission to leave the ship and proceed home until such time as the *Washington* should return.

When I arrived home, which was in Washington, I found that the Fifth Division would probably be broken up, and that some other ships would be put out of commission, because the navy was beginning to feel the shortage of men, which was occasioned by a rapid increase in the number of ships without a corresponding increase in the number of men for manning them.

While I was in Washington a memorial parade took place in which the bones of more than sixty men, taken from the *Maine*, were buried at Arlington. The preliminary arrangements for the ceremonies provided for the detail of a brigadier-general to take command of the parade. I knew that this was probably because no naval officers of high rank were then in Washington whose duties would permit them the time to prepare the parade; but it seemed to me that it would be incongruous to have an army officer command a parade in honor of the burial of navy men. So I went to Captain Potts, who was then aid for personnel, and volunteered for the duty. Potts accepted my offer with alacrity, and I received my orders forthwith.

I found that my command numbered about 2100 men; of these, one detachment came from the *Birmingham*, one from the *Dolphin*, one from the *Mayflower*, one from the receiving-ship *Franklin* at Norfolk, one from Washington Barracks, one from Fort Meyer, and one from the Marine Barracks.

The parade was held on March 23, 1912. The forenoon was bright and beautiful, but I knew enough about weather never to trust it. So I telephoned to the Weather Bureau at eleven o'clock, stating who I was, and asking to be put into communication with the principal forecaster. Then I asked the forecaster what would be the weather that afternoon, saying that I had to parade 2100 men, and to decide at once whether to direct them to wear overcoats or not. The forecaster replied

that the weather would be warm and bright, with a light southwest breeze. So I sent out orders not to wear overcoats.

The detachments of the parade and the various functionaries, including President Taft, assembled at the western end of the War, Navy and State Building at one o'clock. The weather had now become cold, and a light drizzle was beginning. At the same time the speakers began, and the clergyman who made prayers. The weather got colder and wetter, and the speeches and prayers became longer, as the people stood there. The speeches and prayers were over, however, by two o'clock, and then I started the parade for Arlington, leading it myself. By this time rain was descending heavily, and the weather was just warm enough to prevent the rain from freezing. The march to Arlington took an hour, and so did the impressive ceremonies there. I was so fortunate in making the arrangements that no hitch whatever of any kind and no unforeseen incident occurred. The result was that the ceremonies there were completed in an hour. By this time everybody was very cold and very wet.

A few days later I wrote to the commanding officers of the various detachments that had taken part in the parade, asking how many men had been sick on the day following their exposure, and also how many men had been seriously sick.

After the answers had all come in, I found, to my surprise, that no men had been seriously sick on the following day, and that only two men had been at all sick. These results were so remarkable that I made special reports of them to both the Navy and War Departments.

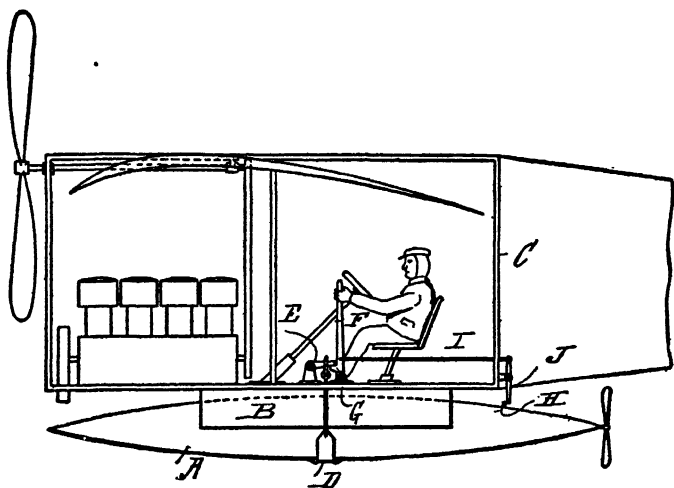
During the winter of 1910 and 1911, while I was urging the establishment of an aëroplane service in the Philippine Islands for use against transports and boats in an attempted invasion, I had pointed out that if the aëroplanes were large enough, they could launch torpedoes against the transports and even against the battle-ships.

This idea was not seriously considered by anybody, except myself; but as time went on, and I saw that *aéroplanes* were becoming larger, I realized that the scheme was obviously practicable. The idea occurred to me of patenting it; but I dismissed that idea for the reason that I felt sure that the scheme must have been proposed before and probably patented. I talked about it to a number of people, among others Park Benjamin, and one afternoon in Washington, in the spring of 1912, we discussed the idea of patenting this scheme, and also another scheme I had, which was an extension of my original wireless-control scheme. The idea underlying this was that the *aéroplane* might supply the missing-link needed to make the wireless-control scheme practicable, because the one great obstacle in the way of wireless control of torpedoes was that a man could not see them very far; and it seemed to me that an observer on an *aéroplane* could accompany the torpedo or other craft, and send signals back to the electric transmitting station by wireless to steer the torpedo to the right or the left. A better plan, however, which occurred to me was to have a transmitting station on the *aéroplane* itself and steer the torpedo directly.

I gave up both of these plans, however, in favor of the plan of dropping torpedoes directly from *aéroplanes*. It seemed to me that this plan would be better even if only one torpedo were to be used in any undertaking, but that it would be immeasurably better if a great number were to be employed. In the latter case it seemed to me that the wireless plan was impracticable.

Mr. Benjamin agreed with me, but I told him that it looked a little foolish to me to apply for a patent on the scheme of launching a torpedo from *aéroplane*, because I felt quite sure that somebody must have gotten ahead of me on so obvious a line of work, especially as I had been talking about it to everybody for more than a year. Mr. Benjamin said that he agreed with me in the main; but that inventors were curious people, and it might be

that nobody except me had thought about this particular plan. He added that ever since I had suggested the idea to him, about a year before, he had kept track of aëronautical patents, and he was quite sure that nothing like my plan had been patented. I told Benjamin that I was keeping pretty fair track myself of the progress of aëronautics, and that I had not seen any suggestion along the line of my scheme in any aëronautical paper, foreign or domestic. I remember saying to him, "I have invented not only a new weapon, but a NEW METHOD OF WARFARE."



Method of and Apparatus for Delivering Submarine Torpedoes
from Airships.

U. S. Patent No. 1,032,394, dated July 16, 1912.

So I asked Benjamin to prepare the patent application. He did so, and made the first claims so broad as to cover even bomb-dropping, in order that the answer which he got from the Patent Office might show him everything there was in that line. The Patent Office of course rejected the claims as drawn. Benjamin made out new claims forthwith in the light of the information received.

The Patent Office granted these claims at once, and gave me a strong and basic patent. My application for

patent was dated April 12, 1912. The patent was issued on July 16, 1912.

The basic character of the patent, and the fact that it covered not only an apparatus but a method are shown by the claims that were granted by the Patent Office.

These read:

"I claim

"1. The method of directing and delivering the attack of a self-propelled submarine torpedo upon a floating target, which consists, first, in transporting said torpedo through the air to a point of desired proximity to said target; second, training said torpedo in the desired direction; third, starting the propelling mechanism of said torpedo, and fourth, releasing said torpedo to fall by gravity to the water.

"2. The method of directing and delivering the attack of a self-propelled submarine torpedo upon a floating target, which consists, first, in transporting said torpedo through the air over a path of relatively high elevation to the vicinity of said target; second, swooping downward to a point of relatively low elevation and training said torpedo in the desired direction; third, starting the propelling mechanism of said torpedo, and fourth, releasing said torpedo to fall by gravity to the water.

"3. In combination with an air-ship, a torpedo of the self-propelled submarine type having an externally-controllable device for starting the propelling mechanism of said torpedo, means for retaining said torpedo below said ship, and, on said ship, means for operating said starting device, and means for releasing said retaining means.

"4. In combination with an air-ship, a torpedo of the self-propelled submarine type having an externally-controllable device for starting the propelling mechanism of said torpedo, means for retaining said torpedo below said ship, and, on said ship, a manually controllable lever and transmitting mechanism actuated by said lever, first, to operate said starting device, and second, to release said retaining means.

"5. In combination with an air-ship, a torpedo of the self-propelled submarine type having an externally-controllable device for starting its propelling mechanism, chocks for said torpedo below said ship, a strap for retaining said torpedo in said chocks, a latch for said strap, and, on said ship, a manually controllable lever for releasing said latch, and transmitting mechanism actuated by said lever, for operating said starting device."

By this time I was quite sure that the Fifth Division would be disbanded, and so I bestirred myself to get command of another division in the fleet, as I knew that a vacancy would soon occur. The vacancy did occur, and about the first of April I received orders to command the Third Division of the fleet, relieving Howard, who was to go on shore duty.

CHAPTER XXXIII

COMMANDING THE THIRD AND THE FIRST DIVISION.

END OF SEA CAREER

SHORTLY after taking command of the third division, I assembled the third and fourth divisions at Provincetown, Massachusetts, by order of the commander-in-chief. By this time the fleet had been divided into two squadrons, of which the senior divisional commander had command of the first squadron, and the next senior divisional commander had command of the second squadron, the commander-in-chief being relieved of his previous duties as divisional commander and permitted to devote his entire attention to the fleet as a whole. The fleet was now temporarily separated into two parts, the first squadron being based on Narragansett Bay, and the second squadron on Provincetown.

In the early part of May I anchored the second squadron, consisting of eight battleships, in Salem Harbor. In the late afternoon of May 10, the orderly at my cabin-door reported to me that an *aéroplane* was in sight, heading toward the squadron. I went up on the quarter-deck, and saw an *aéroplane* coming rapidly toward my flagship the *Georgia*. In a few minutes it landed on the water directly astern. I saw that it had two men in it, and I at once ordered that a boat be sent with an invitation to the aviators to come on board, and that the *aéroplane* be allowed to ride astern of the *Georgia*, like a boat. When the two aviators came on board, I asked them to come aft on the quarter-leck; and I found that they were Mr. W. Starling Burgess and Mr. Phillips Ward Page. This was the first time that I had ever seen a

hydro-aëroplane, and I was delighted with the speed at which it had come and the evident practicability of handling it.

I explained my admiration to Mr. Burgess with so much emphasis that he kindly invited me to go ashore and take dinner with him and Mrs. Burgess. I accepted at once, thinking that he would take me in his aëroplane. Mr. Page went down to the aëroplane, but that did not excite my suspicions until I saw him sailing away with it. I expressed my disappointment to Mr. Burgess, and he answered that he had not supposed that I wanted to go in the aëroplane; in fact, that the possibility had not occurred to him.

So I took him ashore in my barge, and I had a delightful dinner with a delightful family. During the dinner I made as many hints as I could about being taken up in an aëroplane, but without success for some time. Finally Mr. Burgess said, "Do you really mean, Admiral, that you would like to go up in an aëroplane?" I said that I should, and it was soon arranged that an aëroplane would be alongside the *Georgia* at eight o'clock the following morning.

I said nothing about this to anybody, fearing that some one might try to dissuade me; but the next morning the Boston papers had an account of the incident, and a statement that I was going to fly that morning.

The next morning I was ready and waiting a little before eight, with my barge alongside the gangway. At the appointed time the aëroplane hove in sight, and I got into my barge and shoved off. The aëroplane settled in the water almost immediately afterward. I stepped on board of it, and in not more than two minutes after I had left the cabin I was skimming the surface of the water at tremendous speed. Half a minute later I had a sensation that I never had before and shall never have again. No person who has not had the sensation can imagine what it is to feel himself doing a thing not only different

from anything he had ever done before, but directly contrary to all the beliefs of what was possible that he had held during the major portion of his life.

I cannot say that the feeling was pleasant, because it was so strange and so brief that I could not analyze it. The mere speed at which we went was bewildering, and as we rose higher and higher into the air, and the view over which I could see became greater and greater, I seemed to acquire a new and larger view of life; and I remember having a curious realization that things in this world must look very different to some men than to others, for the simple reason that they are higher above the earthly details and commoplaces of life, can see a greater number of things, and get a more accurate idea of the relations of one thing to the other. Most people can see only a few things close at hand, and these things shut out the view of other things that are often more important.

My reason for going up, however, was not to enjoy myself, but to make up my mind as to whether the conditions on board an aëroplane were such as would permit the offensive use of bombs that I had suggested for the defence of the Philippines, and also to see if my scheme of launching automobile torpedoes from aëroplanes seemed practical. I desired to ascertain from personal experience whether in an aëroplane one was in an atmosphere of confusion and noise and oscillation, such that his mind would not operate, and he could not use instruments.

To my delight, I found a condition of the greatest tranquillity and evenness. The only confusing element was the tremendous noise of the engine; but as that was uniform, one soon became accustomed to it. The aëroplane was immeasurably more steady than a destroyer or even a ship, careening to the left or right only occasionally, and with a smooth, unjerky motion. At one time we flew over a column of boats that were bringing a large

party of men off from shore, and I said to myself that with a few bombs I could prevent any boat ever getting to its ship.

After leaving the water, we ascended to only about eight hundred feet; but that height was so great in comparison with any other height at which I had ever been, that we did not seem to be going very fast. The only time that I got a sensation of great speed was when we flew past the topmast of the *Georgia*, and within a few feet of it.

Mr. Burgess had told me that it was not considered wise for a man to stay up more than five minutes on his first trip. So Mr. Page, who was in charge of the machine that day, soon landed me alongside of the *Georgia*.

My barge was in readiness, and in about two minutes more I was again in my cabin. Looking at the clock, I saw that I had been gone from the cabin exactly fifteen minutes. I could not realize this at first, because I had flown around and over the entire harbor and town of Salem!

I had gone up in uniform, so as to make my flight an official matter, even in the matter of my own feelings. I made a report of my flight to the Navy Department immediately, stated that I thought that the aëroplane could be made a very important naval weapon, and recommended it to the attention of the department. In commenting on my flight not long afterward, one of my friends remarked that I was the "flightiest admiral in the world."

I was the first officer of a rank equal to mine to fly in an aëroplane officially and in uniform. I have heard since that Rear-Admiral Chester U. S. N. took an unofficial flight some time before I did.

I was surprised at the attention which was given to my flight by the public press in this country and abroad. Startling headlines, some red and some black, ornamented the newspapers; and I was quoted as saying things that I never said and never thought of. Some of

my reputed sayings made me seem a little ridiculous, but I did not mind that, because I thought I had done a good thing, and because I knew the men of my command thought so, from the cheers which they had sent up as I flew by them on my return.

In June, 1912, I published an article in the *Naval Institute*, called "The Relative Importance of Turret and Telescope Sight."

The first four paragraphs were as follows :

The value of the turret is recognized. The victory of the *Monitor* over the *Merrimac* was so opportune and dramatic, and its results were so evident, important and immediate, that the turret was at once proclaimed, by all the world, to be one of the greatest inventions of the age.

The telescope sight, on the other hand, made its obscure little débüt on a small gun-boat, way up in Bering Sea; its value was not realized for ten years; and it grew so slowly into use that it came gradually to be regarded as a "matter of course." Though adopted now by every civilized navy in the world, it has nevertheless received no individual recognition; and yet there are some who think that it is a more important factor in naval warfare than the turret.

To compare the relative values of the turret and the telescope sight, let us imagine two ships, A and B, meeting on the ocean and fighting; A having open sights and turrets, and B having telescope sights and no turrets; B's guns being arranged in broadside.

Which ship would win?

The essay discussed the conditions of a fight between two such ships according to the principles of gunnery and tactics, and came to the conclusion that the battle-ship which had telescope sights and no turret would whip the ship which had turrets and no telescope sights, and quickly.

The essay then discussed an attack by destroyers, and also by light cruisers, against the two supposititious battle-ships, and came to the conclusion that the ship which had telescope sights and no turret would have more than

eight times the chance of withstanding the attack that a ship with turrets and without telescope sights would have. It pointed out also that a battle-ship without telescope sights would have a very poor chance of escape from an attack by six destroyers even in the daytime, whereas a battle-ship with telescope sights would almost surely beat them off.

The essay closed as follows :

Therefore, it is possible that, *were it not for the naval telescope sight, the battleship, including the turret, might have become obsolete before now.* It is certain that the battleships would have much less than their present effectiveness to plead as a reason for their existence; that they would fall an easier prey to the torpedo; and that we should have had, and should still have, very much more difficulty in getting money to build them.

The turret has no field of usefulness in torpedo warfare, and is applicable to battleships only. The naval telescope sight has an important field in torpedo warfare, and is applicable to all kinds of vessels. Over the whole world today, there is hardly a modern gun on board a modern vessel that is not fitted with telescope sights

In the war between Japan and Russia, the destruction of the Russian fleet at Tsushima was so complete as to end the war. The main cause of its destruction was that the Russian gunnery was less accurate than the Japanese. The more accurate gunnery of the Japanese secured an initial advantage in the beginning of the battle, which according to a natural law, increased in geometrical ratio as the battle went on, and became overwhelming in a few minutes.

It has been stated on excellent authority that the Japanese guns were fitted with telescope sights in good order, while very few of the Russian ships had telescope sights—and that the telescope sights which were fitted were not in good order.

If this be true (and it probably is), the reason for the sudden annihilation of the Russian fleet stands out sharp and clear; and we see that *the naval telescope sight, more than any other one thing, was the cause of the turning of the tide of history in the direction in which it did turn.*

I have been informed since that there is no doubt as to the existence of good telescope sights in the Japanese fleet and their non-existence in the Russian fleet.

The thing which prompted me to write this article was a public movement then going on for putting up a statue to Ericsson. I felt thoroughly convinced myself that the telescope sight had been a greater contribution to navies than the turret had, and so I determined to say so as loudly as I could. I expected that my claims would be ridiculed, at least by some, and that I would be accused of gross exaggeration at the least. To my surprise, although my article was copied here and there, no comment whatever was made on it either favorable or adverse. At first I was considerably chagrined about this, and told of my chagrin to different people. They all told me that I had put my case so convincingly that there was nothing further to be said about it.

About the first of June, the fleet was sent South, because of very considerable trouble in the regions of Haiti and San Domingo. Most of the fleet anchored in Key West Harbor, a thing that pleased me greatly. Matters were smoothed out soon; so that most of the ships of the fleet were able to go North in a few weeks.

During my stays at Key West, both on this occasion and on the previous occasion, when I had been in the *Washington*, I was able to carry on some very interesting experiments with new forms of my horisometer, made by the Brashear Company, of Pittsburgh. None of the results achieved, however, were good enough to warrant my submitting the instrument to the Bureau of Ordnance for official test. The great difficulty was that, though I continually improved the instrument, the requirements of naval gunnery increased more rapidly than my improvements advanced.

The fleet had become gradually dispersed, but finally the commander-in-chief collected it in the neighborhood of Narragansett Bay. My division was the last to join,

and as I approached the fleet, which was at anchor, my division was in "natural order"; that is, the flag-ship was leading.

I discovered, however, on the following morning that, due to the way in which the ships had been swinging to the tide, the other divisions had been in inverted order. The result was that, when the fleet went out to tactical drill the following day, my division was inverted whenever the other divisions were steaming in natural order, and vice versa. While making a manœuver, the commander-in-chief signaled to me by the general signal-book, "Your division is inverted." I had already become aware of this, but I saw no way of rectifying the matter while the fleet was going through tactical evolutions. When the commander-in-chief made me this signal, my flag-lieutenant and I searched the signal-book with feverish haste to find a signal for putting the division into natural order. We could find no signal in the book. At the end of the manœuver the other divisions were inverted, and mine was in natural order. I went through an agony for about a minute; then suddenly an inspiration came to me. We were going at sixteen knots in a strong wind and a considerable sea, and there was that atmosphere of tension which there always is at fleet tactical drills, while these enormous masses of delicate machines are rushing over the ocean, with the danger ever present of collision and disaster.

My inspiration came to me perfectly clear, but in the urgent circumstances of the moment I had no time in which to explain to anybody. I ordered the captain of the *Georgia* to turn immediately at right angles to the left, and I ordered Russell to make a P. D. L. (pass down the line) signal with the semaphore, for the other ships of my division to follow the *Georgia*. When that signal was put through and understood, I ordered Russell to make another P. D. L. signal for the *New Jersey*, which was the last ship of my division, not to change her course. I then told Russell to make another P. D. L. signal for

the *Virginia* to fall in astern of the *New Jersey*. Before this time I had turned the *Georgia* again to the right, to her original course, followed by the *Nebraska*. When the *Virginia* had fallen astern of the *New Jersey*, I ordered the *Nebraska* to fall in astern of the *Virginia*, and then I ordered the captain of the *Georgia* to fall in astern of the *Nebraska*.

This evolution must have looked like confusion worse confounded to the commander-in-chief, for in the midst of it he signaled to me, "What are you doing?" I could not answer this signal at the time; but the commander-in-chief soon saw what I was doing, and realized that it was the only thing I could do, though it was something entirely new in fleet tactics.

The manœuver was an entire success. I drew up a report to the Navy Department describing it and recommending that it be adopted. I forwarded the report, of course, through the commander-in-chief. He approved it favorably, and the manœuver was shortly afterward adopted.

By this time I had made a number of basic inventions, and owned sixty United States patents, besides foreign patents. The invention which I made that day in the stress of excitement of fleet tactical drill I never patented, but this was not because I was ashamed of it. I do not know of any other invention having been made in such circumstances. I must revise the last statement, however, by saying that, according to my conception of what an invention is, all the new movements and combinations which naval and military commanders have made in great emergencies have been inventions, and of the most brilliant and important kind. Cæsar was an inventor, and by far the greatest military inventor who ever lived. Alexander was an inventor, and so in a lesser degree was Moltke.

In October, 1912, I published in the *Naval Institute* an article called, "The Mean Point of Impact," which was intended to prove the value of accurate range-finding. The article started with a short mathematical dis-

cussion, which proved that, if the mean point of impact of a salvo fired from a ship was fifty yards over or short of a target, the probability of hitting the target would be twelve and a half times as great as it would be if the mean point of impact were 150 yards over or short. As a mean point of impact of a salvo is, roughly speaking, in the middle of where all the projectiles fall, and as this middle is at the distance from the ship which equals the "sight bar range" at which the guns are fired, this meant that, if the sight bar range were only fifty yards wrong in any case, the chances of hitting would be *twelve and one-half times* as great as if the sight bar range were 150 yards wrong.

I had always been more impressed with the necessity for accurate range-finding than anybody else in the navy, but I had never realized until I made the calculations for this article how great the value of accurate range-finding is, and how great a difference would be made by a difference in the accuracy of range-finding between two ships fighting each other, especially if that range-finding were very accurate. I mean that I had never realized that (with range-finding, as with every other thing in which skill is required) the greater the skill, the greater a difference is made by any difference in skill. For instance: the difference of a few seconds in the time required to run a mile does not make a great difference in the standing of any two common horses, but among the great racers the difference of one second makes almost a difference in class.

I think my article had an effect in rousing officers and men to increased diligence in range-finding. This was the case not only in the navy, but in the army. In fact, General Weaver, chief of artillery of the army, issued an order that every officer in the Coast Artillery should study my article. I believe that the accuracy of German naval gunnery has been attained mainly by following methods like those that I have always urged.

In the latter part of July the battle-ships of the fleet

held a night drill in which the second squadron, which was under my command, took up a position somewhere south of Block Island, and the first squadron endeavored to find it, using destroyers as scouts; while the second squadron, also using destroyers as scouts, endeavored to elude it, and to reach a position from which it could make an attack upon the coast. Fortunately for me, I was able to elude the first squadron, and when day broke on the following morning, to see that not a vessel of the "enemy" was in sight.

Shortly after this, and according to a plan previously arranged, the senior division commander was detached and put on shore duty, and I was put in command of the first division and the first squadron, and made thereby the second in command of the fleet. Not long after this the commander-in-chief directed another night fleet drill, much like the previous one, but different in some details. In this case I was in command of the first squadron defending the fleet, and sent in pursuit of the second squadron, which was supposed to be an enemy fleet, and which tried to elude me. I shall never forget that night, or at least one part of it somewhat after midnight, when I was leading my squadron at a speed of fourteen knots around Block Island, with all lights out; especially the time when information, just received by wireless from a scout, impelled me to make an abrupt change of course in order to catch the second squadron, under conditions such that, if I made a mistake in my hurried calculations, I had a good chance of running my flag-ship ashore, and having the *Utah* crash into her from behind. I suffered an agony for about a minute; but fortunately I made no mistake, and fortunately I caught the "enemy" about an hour afterward.

The entire fleet, with the exception of the flag-ship of the commander-in-chief, was now temporarily under my command. I anchored it east of Block Island, and remained there for a few hours, because of a misunderstanding by one of the division commanders.

I got the fleet under way at daylight, and took a great deal of pleasure in conducting it from there to an anchorage near Fort Pond Bay, at the eastern end of Long Island, where the commander-in-chief was anchored. This was the only time except once that I ever manœuvered so large a number of vessels of different kinds; I think there were twelve battle-ships and about sixteen destroyers. I remember realizing how much there was to be learned, and in saying to myself that the "club" which I then held in my hands, enormous as it was, was, after all, merely a development of the club with which Cain had killed Abel; and that it was so much of a development that it was more powerful than any army in the world; more powerful, in fact, than all the armies of the world put together.

Not long afterward the commander-in-chief held another fleet drill in which I was given command of the greater part of the fleet, and given the task of starting with the fleet from Newport, and beating off an enemy force that was supposed to have suddenly appeared outside. According to the rules of the game, I won it.

Not long after that the commander-in-chief held another drill, in which half the fleet was supposed to endeavor to approach a part of the coast in the daytime, while the other half of the fleet, of which I was in command, was to give it battle and beat it off. I was so fortunate as to be able to T the column of the enemy, and to get him under such a gun-fire from my ships, and such a torpedo-fire from my destroyers, which approached him behind a smoke-screen, that I was able to defeat him.

This ended our tactical games that summer. I had taken part as commander of one of the competing sides in four games, and *in every game* I had been so fortunate as to be the winner.

During the preceding ten years I had made a study of optics, and had invented and constructed several optical instruments which I will not mention here, because they were never quite successful, and were never submitted by

me for practical test. I had had an uneasy feeling that by some very simple optical device we might be able to make our target-practice much less onerous and much more useful. By this time our target practice at sea had become a very difficult matter indeed, not from the point of view of gunnery, but from that of seamanship, because of the tremendous difficulties involved in towing the target screen which we fired at, which was about ninety feet long and thirty feet high. To tow a screen in a smooth sea and a light breeze was not difficult; but it was so difficult to do it in a heavy sea and a strong breeze that tow-ropes were constantly breaking, and targets were constantly drifting ashore. Besides, the number of screens required, the size of the floats needed to carry the screens, the number of tugs needed, and all the rest of the paraphernalia involved, forced the fleet to have target practice near a base, and Hampton Roads was the only practical one.

In the early part of April, before I took command of the third division, I went down to witness fleet target-practice unofficially, and took up my quarters with my friend, Captain Spencer Wood, then commanding the *Nebraska*. The fleet was having a horrid time with the target-rafts. In watching the manœuvres of tugs with a mutinous target-raft one day, it suddenly occurred to me that, if one would put a small prism of glass in front of a telescope sight, the rays of light would be refracted, say, five degrees to the right or left; so that one would seem to point at a target, and yet the gun would be pointed five degrees to the left or the right of it. This would enable a man to use another ship as a target, and yet fire five degrees to the right of it. Furthermore, an observer, by holding a similar prism in his hand, but in the reverse direction, could see the splash in the water made by the projectile refracted back; so that the splash would appear in the same relation to the target that it would actually have if the gun had been fired directly at the target.

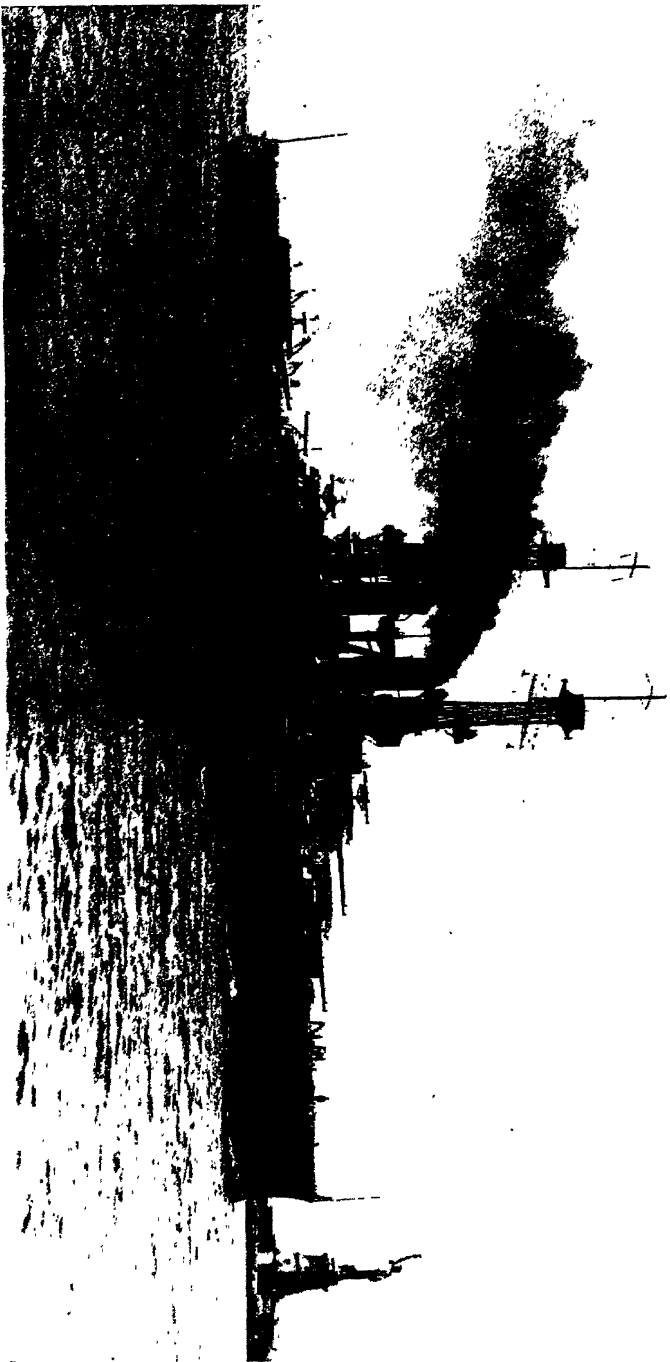
I talked over this matter with some officers, and they

all declared that my idea would bring about a wonderful revolution in target-practice if I could only make it work practically. I had no opportunity of doing anything with it for some time; but when I was in the *Georgia*, at Key West, I bought some prisms. I secured one prism in front of the telescope sight of a six-pounder gun, sent a boat out a few hundred yards distant, and myself fired five shots directly at the boat, apparently. I reported this to the Navy Department, and when I was in command of the first division at Newport, I received permission from the Bureau of Ordnance to try the experiment on a larger scale.

So I got some strongly made prisms, and secured them in a position in front of the telescope sight of a five-inch gun, which fired a shell weighing over sixty pounds. Then I sent the *North Dakota* to a position about fifteen hundred yards distant, and told Lieutenant-Commander Madison, the gunnery-officer, to fire forty-five shots directly at her. This he did, and with perfect success. Then I got permission from the bureau to fire twenty twelve-inch shots. After making proper arrangements, I fired these twenty twelve-inch shells, each weighing over eight hundred pounds, directly at the *Delaware*, apparently.

It will be seen that by this plan real ships could be used as targets instead of canvas screens, and that it would not be necessary to go to any specially selected place for target-practice, because target-practice could be held at sea anywhere and at any time.

I have not mentioned one very great difficulty with carrying out this plan, however, which I had realized from the very first, but which seemed to be merely a difficulty that could be overcome. I refer to the fact that, unless the prism is held exactly horizontally, the ray of light will not be refracted exactly horizontally, but be tilted up or down. I thought that the best way to secure horizontality was to connect each prism with a gyroscope. As Mr. Elmer E. Sperry had recently made some won-



© E. Muller.

U. S. S. *FLORIDA*

derful and brilliant inventions in gyroscopes, I explained my plans to him one day in my cabin. He said he was quite sure that he could make the gyroscope do what I wanted, and that he was at my service, and the navy's, for doing it.

In July, 1912, the Naval Institute issued the nominations for the election of officers and members of the board of control for the ensuing year. By the rules of the institute, there were to be three nominations for each position. The rule was carried out in this instance for all of the offices except for that of President; but for that office only one person was nominated, myself. The election took place in October, and I was elected.

A grand review of the fleet was held in New York in October. It was a splendid spectacle, and we were delightfully entertained. One day my chaperon was that extremely delightful gentleman, President John Finley. As the presidential election was to take place in the following month, I was naturally much interested in what Mr. Finley told me in regard to the Democratic candidate, Mr. Wilson. Mr. Finley described him as a man of enormous ability, and one capable, he felt sure from a long acquaintance with him, of handling the complicated affairs of the United States both internally and in relation to foreign powers with perfect skill and foresight.

About this time *The New York Times* asked for an interview with me in which I should give the *Times* my views as to the state of the navy at the time, the way in which it had progressed, and the way in which it ought to progress. I agreed to this gladly, and had a delightful talk with Mr. Edward Marshall one Friday evening. Mr. Marshall took no notes whatever; but on the following Sunday, October 13, 1912, the *Times* published a full-page interview which was extraordinarily accurate, and illustrated by a picture of me that looked like a picture of Methuselah with epaulets.

In the course of the interview I extolled what the navy had done and was still doing, except in one matter, that of

aéronautics. I was beginning to become much concerned about our backwardness in this matter. One of Mr. Marshall's questions was:

"What has the navy done with the airplane?"

My answer was:

"Much. It is now realized by the whole world that the airplane will in the future be a very important element in warfare. But notwithstanding that we have done something with it, it is nevertheless unfortunately true that the United States Navy has shown less interest in the modern developments of aviation than could be desired. As a whole, we do not seem to have quite apprehended yet the vast scope of the changes which the *aéroplane* will make in warfare."

The officers and men of the fleet were delightfully entertained in New York, and given receptions, entertainments, and dinners. At these dinners many of the best speakers of New York descanted eloquently on the excellence of our navy and on the necessity for keeping it abreast the progress of the country in size and power.

Shortly after the ceremonies in New York, the fleet, or the principal part of it, was sent to Charleston, South Carolina, largely to stimulate the interest of the people in the navy, but mainly to demonstrate the fact that, under good conditions of weather, our super-dreadnoughts could cross the bar at Charleston at high tide.

We had a delightful time in Charleston, possibly more delightful, even, than in New York. This was due to the shorter distances that we had to traverse, to the smaller number of faces to remember, and to that peculiar quality of geniality which is so charming an attribute of the people of our South. The ceremonies and entertainments were much like those given us in New York. They were not on so large a scale or so expensive, but the speeches were very much more pleasant to listen to. The art of oratory, while not at all extinct in the North, especially in the pulpit, has lost much of that grace and polish which used to adorn it even in the North; because, un-

doubtedly, of the greater importance which practicality has assumed in cities, where many million people must live together. But in the South, where the conditions of living are easier, and where men have more time to devote to the sentimental side of life, the art of oratory is still practised in all its former beauty.

On the way North we stopped at Hampton Roads. We knew that the service of Admiral Osterhaus, as commander-in-chief of the fleet, was drawing to a close, and there was much speculation as to who would succeed him. As I was second in command, I had hopes that I should do so; but I made no application for the position, because I knew that Rear-Admiral Badger desired it, and Badger was not only my senior in rank, but an officer admirably fitted for the post. The afternoon after arriving at Hampton Roads I read in the *Army and Navy Journal*, that Badger had been selected. As I was only a few numbers behind Badger on the navy list, it occurred to me that I would probably not be kept in the fleet, and that I might take Badger's place as aid for inspections.

In a few days I received orders to do so.

From Hampton Roads we went to New York. At that time the body of Ambassador Whitelaw Reid was being sent across in the British cruiser *Galatea*. I received orders to proceed to sea with my flag-ship, another dreadnought, and four destroyers, to meet the funeral-ship in the neighborhood of Nantucket, escort it to an anchorage near West 96th Street, New York, take charge of the funeral proceedings until the body reached the shore, attend the ceremonies at the cathedral, and supply a suitable escort.

We met the funeral-ship at the appointed locality, and escorted her to New York. We found the entrance to Sandy Hook on the following morning but almost immediately afterward a dense fog set in. This cleared away shortly, and we advanced rapidly up the lower bay; but suddenly, just north of the Narrows, we were caught in a rapidly descending fog, and so were a great many

merchant steamers which had been attempting to seize the clear weather and to go out or come in. My two dreadnoughts and four destroyers and the British ship seemed suddenly to have been caught in a mob of vessels of all sorts, each one of which kept sending up the most dismal warning signals with her steam-whistle. For a few minutes the situation looked extremely critical; but the fog cleared away as suddenly as it had come, and I steamed my heterogeneous collection of vessels as rapidly as possible to the designated anchorage.

I had to get the body ashore next day. It was in a very heavy leaden box, which was secured on the upper deck of the *Galatea*. To my great distress, the weather became exceedingly windy; which made the water so rough that the task of handling the heavy casket would be extremely difficult.

In the early part of the afternoon it was lowered in safety into one of our sailing launches alongside of the *Galatea* and then the funeral procession started to the shore. I was not much concerned as to what would happen until the attempt should be made to remove the casket from the sailing launch, and put it on the float at the river landing. But I was very much concerned as to what would happen then, for I knew that both the boat and the float would be jumping up and down violently and irregularly, and that the operation of transferring the casket would be exceedingly difficult. I impressed the officer in charge of the operation with the seriousness of the matter, and told him that if that casket was dropped into the river, the fact would be known in Australia in half an hour. I remember the extreme anxiety with which I watched the operation through a long glass mounted on my telescope-mount, and my great relief when a signal announced that it had been completed.

The following forenoon magnificent funeral services were held in the Cathedral of St. John the Divine. The church was crowded both in the nave and the chancel. Ex-President Roosevelt sat on the right side of the

chancel, and I remember with what military alacrity he sprang to his feet when President Taft came into the chancel with a large staff, and took a seat on the opposite side. I sat with my staff in the front pew, on the left side of the middle aisle.

This was my last official act as a sea-officer. My wife and a few friends took lunch with me on board the *Florida* at one o'clock. Shortly afterward, my beautiful two-starred flag, the acme of all I had worked for since I was six years old, was hauled down disconsolately from the masthead. Captain Maxwell gave it to me to keep, and with it under my arm I took passage ashore in what only an hour before, had been my barge.

Life has great changes for all of us. But few changes are as great as when an admiral leaves his flag-ship behind him forever, and leaves behind him, also forever, the life of the sea, and the charm of the sea, and the fluttering flags, and the uniform and the glamour and the danger and the splendor, and that wonderful thing—*command*.

CHAPTER XXXIV

AID FOR OPERATIONS, AERONAUTICS AND OUTBREAK OF WAR

I ASSUMED the duties of aid for inspections on January 6, 1913; but in the afternoon of February 8, Secretary Meyer told me that Admiral Vreeland's health was breaking down and that he wished me to take his place as aid for operations.

Of course I was gratified by being detailed to the most important position in the navy, but I cannot say that I was pleased. This was because I did not feel that I was competent to undertake the duties. My experience for almost a year in charge of the war-plan section of the General Board had let me see how much there was to be done in the matter of getting up adequate war plans, and had also made me feel that I did not have the kind of knowledge and ability required for that work. My training had not fitted me for it except incompletely, and my year and three months of experience in command of a division in the active fleet had served more to show me what needed to be done than to indicate to me the steps which should be taken to do it.

At this time the navy was getting along smoothly; the super-dreadnoughts were a success, our skill in gunnery was increasing, the war college was firmly established, and the fleet itself was in excellent condition. As to the Navy Department, the aid system was working well, and had the confidence of the service, and Secretary Meyer had proved himself to have, in the opinion of the upper officers of the navy, the best conception of what a navy ought to be of any secretary in many years.

But the upper officers of the navy realized that while

the navy was in good condition for times of peace, it was not organized for war, for the reason that no measures had been taken by which it could be expanded quickly, and yet maintain the efficiency of the individual ships and of the fleet. We had enough trained men, or almost enough, to man the fleet in peace-time, but we had no reserve to fall back upon to man it sufficiently for war, to man the ships in reserve which would be added to the fleet, to man ships and other vessels that would be bought, and to supply the extra men needed in the shore stations. In the European and Japanese navies, on the contrary, large forces of reserves were kept in a state of continuous readiness, so that they would be almost instantly available in case of war. We knew that, in case of war, we should be called upon suddenly to recruit a great many wholly untrained men, and to bring back into the navy a few partly trained men. We knew that the only way in which to utilize those men would be to distribute them among all the ship and shore stations; but we realized that this would entail an enormous falling off in efficiency of even the ships in the active fleet, because those ships would have to send to other ships and to shore stations many men who had been trained to skill in certain duties, and to replace those trained men with untrained men. As foreign navies, especially the British, German, and Japanese, had foreseen this trouble and provided against it, we knew that if we got into war with any of those navies, our navy would start under a tremendous handicap.

We knew also that our Navy Department had not kept pace with the times in the matter of its method of administration. The principal foreign navies had realized that the need for utilizing modern means of transportation and communication, necessitated an organization of the department itself whereby the navy as a whole could be handled as a war machine. Our Navy Department was working under virtually the same organization as that under which it had worked during the Civil War

except that Mr. Meyer had recently established four aids to help him handle its vast and intricate mechanism.

I found Mr. Meyer an excellent man to work with. He was cold in his manner, and had at first a rather depressing effect on a person, the effect making him feel inferior. But I soon found that he was really a modest man, and not "stuck up," as he seemed at first to be. It seemed to me that his principal defect as secretary of the navy was his lack of knowledge of the physical sciences and of engineering. Of course, as secretary of the navy, he did not have to be a physicist or an engineer; but it would have helped him vastly if he had had sufficient knowledge of the principles of the physical sciences and of engineering to be able to understand clearly the recommendations and discussions of the ordnance officers, engineers, and constructors, and to talk to them in their own language.

The upper officers of our navy at this time realized that there were only two navies that we had cause to fear, the German and the Japanese. We knew, of course, that the British Navy was much stronger than ours; but we saw no reason for coming into collision with it. We knew also that the French Navy was about the equal of ours in some ways, and that it had been much greater than ours a few years previous; but we knew also that Camille Pelletan, while minister of marine, had injured it so greatly that it had not yet recovered, and we argued that if it were possible for a minister of marine to be permitted to do so much harm to a navy, there must be something wrong somewhere else. Therefore we did not fear the French Navy.

As to the Japanese Navy, we knew that it was inferior to ours in the matter of ships and guns; but we knew also that the Japanese had an excellent system of trained reserves, which we did not have, and that, in case we should get into war with Japan, Japan could take the Philippines, and that any fleet which we should send out to Asia in consequence would have to operate out

there at such tremendous disadvantages in the matter of supplies, repair stations, etc., that whatever advantage we might have in our greater number of ships would be largely overcome. We knew also that the Japanese were far better strategists than we and that they showed it in many ways; for instance, in the organization and administration of the Navy Department. We knew that the Japanese Navy was controlled strategically by a general staff the members of whom had been carefully selected years before and carefully trained since then.

But it was the German Navy that occupied our attention the most. We did not know as much about the German Navy as we should have liked to know; but we did know that the German Navy was modelled on the German Army, and that the German Army was the most efficient organization of the world. We knew that the German Emperor was a military man first and a naval man second, and that he was directing all the resources of Germany, material, intellectual, and spiritual, to the perfection of the German army and navy. We knew that it was a German physicist, Helmholtz, who had analyzed and synthesized sound, and that the Germans were very expert at both analysis and synthesis. We also knew that they had directed their powers to analyzing military and naval problems and situations, and to synthesizing military and naval methods to deal with them. We knew that the German Army and Navy had not been built haphazard, and that they were not operated by haphazard methods; but that they had been built up, and were being operated by mathematical methods. We knew that the German Navy Department was divided into three parts, the general staff, the ministry of marine, and the naval cabinet, which executed respectively the functions of strategy, logistics, and tactics; that is, of planning to do, providing the means with which to do, and doing. We knew that these three divisions were coequal in rank, that each was headed by a man highly trained for his task, that all were under the immediate direction

of the emperor, and that he was highly trained for his task.

We did not like the German idea of war or the German belief that might makes right and as loyal Americans we abhorred the utter subjection of the individual man to the state. But we realized that the German naval machine was immeasurably better than ours, and we realized that Prussia's attacks on Denmark in 1864, on Austria in 1866, and on France in 1870 showed the direction of the national purpose; and that Germany would again precipitate a war as soon as she again felt sure that she could win. Therefore we deplored the dangerous inefficiency of our Navy Department.

We did not have even a general staff, and the only man in the United States Navy who could remotely pretend to occupy the position of a naval strategist was myself! I occupied that position simply because I occupied the position of military adviser to the secretary. I knew I was not fitted by training or experience for such a position, but I had had as much training and experience as anybody else in the navy.

The fact was that, fit or unfit, I was the official strategist of the navy. Fit or unfit, the duty devolved upon me to do the best I could.

Mr. Meyer left office on the fifth of March, twenty-two days after he had made me aid for operations. When he left Washington, the four aids went to the railroad station, and said good-by to him with that feeling of regret and respect with which one says good-by to a thoroughly honorable man.

Mr. Josephus Daniels became Secretary of the Navy on March 5, 1913, and the aids were presented to him by Mr. Meyer. We found Mr. Daniels to be an extremely attractive man, with a geniality of manner and an evident companionableness that were in marked contrast to the cold manner and New England reserve of Mr. Meyer. We had the pleasure soon of meeting Mrs. Daniels and their four splendid and handsome boys, and

of feeling that inexpressible pleasure that one always feels in meeting an evidently happy family. My subsequent acquaintanceship with Mr. Daniels confirmed me in the estimate that I made of him personally on the first day of our acquaintance, and which I have taken all proper occasions to express. In my diary I see frequent mentions of him as a man of refinement, sympathy, and good nature, whose serenity was rarely ruffled and whose politeness was unfailing.

Shortly after Mr. Daniels assumed office, the promotion of Captain Templin M. Potts, the aid for personnel, became due. Potts had been captain of the battle-ship *Georgia*, and when Rear-Admiral Wainwright had been made aid for operations, Mr. Meyer had detached him from the command of the *Georgia* and made him chief intelligence officer on the request of Wainwright. Later he relieved Admiral Potter as aid for personnel. According to law, Potts was examined by a board of three rear-admirals on the active list. He was passed. All the officers expected this, because Potts was not only a man of ability, but of the kind of ability and experience that would make him a good rear-admiral. To our surprise, the Secretary refused to accept the report of the admirals on the ground that Potts had not had enough sea service, and he ordered Potts to sea in the command of the *Louisiana*! I expostulated, but without avail. The following Sunday I visited the Secretary's house and expressed myself with much emphasis in regard to what I declared was an act of injustice of the nature of executing an ex-post facto law. I pointed out to the Secretary that Potts had discharged all his duties to the entire satisfaction of his superiors, and that it would be fatal to discipline if officers could not find in the satisfactory discharge of their duties the best assurance of promotion. I expressed myself with so much emphasis that I expected the Secretary would remove me at once from the position of aid for operations. In fact, on my way to his house, I had told Admiral

Schroeder and Admiral Osterhaus that I thought my term of office would expire that afternoon. But, to my surprise, the Secretary accepted my expostulations with perfect composure and good humor. When I left, I shook hands with him; and I departed with the conviction that he was personally sincere.

During the following three months I came to have a great liking for the Secretary; but I thought that I saw in him an incorrect judgment as to the best way in which to make the navy effective for the purpose for which it was maintained by the United States. It seemed to me that he did not see the navy as a whole, but only certain parts of it; with the natural result that the parts upon which he fixed his attention seemed to him larger than they really were. I did not seem to be able to make him see the navy as a whole; but I thought that if I could get him to go to the war college, and show him the great numbers of books on the art of war and explain the strategic games to him, I might make him see that the navy was really a vast and highly specialized machine, and not an aggregation of separate parts. He went up to the war college with me and became interested in it at once. This interest he maintained during the two years that I was aid for operations, though I could not make up my mind that he really understood the purpose of the college. It seemed to me that he regarded it as a place where one went to learn things that were already known, as one does at the usual institutes of learning that we call colleges.

The following August, 1913, I secured the Secretary's permission to spend the month at the war college instead of taking the usual leave. I did this because it seemed to me that the war college was not quite close enough to the practical navy, and I wanted to try to see what was the trouble. My conclusion was that the war college personnel was too largely self-replacing, and so I suggested to Admiral Knight, who had a mind which was fine, but which had been exercised mostly in the pre-

cise arts of seamanship, gunnery, and navigation, that he should become president. Knight demurred, but finally agreed. I then secured the approval of the General Board, including Admiral Dewey, and of the other aids. But when I proposed Knight's name to the Secretary, he said he thought that the man for that position was Admiral Fiske!

This surprised me at first, but I quickly realized, what I had come strongly to suspect, that the Secretary wanted to get rid of me. Some of my friends had told me at different times that I would not stay as aid for operations long, because I was not sufficiently pliable.

The position of president of the war college was pleasanter than that of aid for operations, for he had a house, garden, servants, carriage, barge, and all the other delightful things that go with a high naval or military command. My friends told me, however, that I must hang on if I could. I did so for about two weeks, but finally I told the Secretary that I would not set a bad example to the service, and that I would go to the war college, and willingly, if he insisted on it. But the next day Admiral Dewey came back to Washington, and when I told him about the proposed change, he said it must not be. He said that I was exactly the man for aid for operations, and that if I gave it up, somebody might be put in who cared only for his own ease and comfort, regardless of the efficiency of the navy. Dewey went to the Secretary twice and finally prevailed upon him to retain me as aid for operations. Then Knight became president of the war college. He made an admirable president, a much better president than I would have made.

During the month of August my wife and I spent one evening at the casino. A dance was going on in which some couples were exercising themselves with the "turkey trot," which at that time was a most ungainly performance. I got into conversation with Rear-Admiral Davis, retired, a man ten years older than I, and

very highly educated. I made some laughing comment about the dance, to which he answered very gravely, "I see nothing to laugh at." He spoke so gravely that I realized that he was not speaking merely of the dance that we were witnessing, and so I asked him why he spoke as he did. He said:

"You know that this is not new, and is all over Europe."

I said I knew it was all over Europe, but that I thought it was something new. He answered in effect as follows (and what he said was the most remarkable thing that has ever been said to me):

"This especial step may be new, but dancing crazes are old, and this is part of a dancing craze. I am quite sure that it portends evil. Whenever a savage tribe hears that the men of another tribe are dancing, it gets ready for war. There have been several dancing crazes recorded in history. One dancing craze preceded the Crusades, another dancing craze preceded the Reign of Terror. Every dancing craze has been followed in about a year by an awful war."

In about a year the war broke out in Europe!

This suggests the degree of preventability of wars by mortals.

On October 11 I was again reëlected president of the Naval Institute.

Shortly after the new administration came in, some of the cabinet officers and members of their families went down in the *Mayflower* to see the target-practice of the fleet. I went also, and had the pleasure of meeting them. During the subsequent two years I had the honor of meeting all the cabinet officers and their wives on various occasions, and I have never met more delightful people. But my experience was the reverse of what I expected in regard to the cabinet officers themselves. I had always looked up to a cabinet officer with great awe, realizing that each one was in such a responsible position that any failure on his part to discharge his duties wisely

would injure the fortunes and happiness of many million people. As I was a great admirer of our form of government, and of the elaborate mechanism employed for selecting the best men from a population of a hundred million people, my idea of a cabinet officer was a Hercules of intellect, a man capable of mentally grasping a difficult problem in the way a trained wrestler physically grasps an antagonist. I thought of cabinet officers as men dwelling apart in a splendid intellectual isolation, looking down on ordinary men like me, and the kind of people with whom I had spent my life. But I found a number of very genial and unassuming men, kindly and companionable, but without any trace of grandeur that I could discover in their intellects. In fact, it seemed to me that none of them was in the intellectual class with Luce, Mahan, or Harry Taylor; that none of them was a man of brilliancy and originality like Park Benjamin, Frank J. Sprague, or A. A. Michelson; and that none of them indicated the administrative capacity of Mr. Thayer, president of the Western Electric Company, or of several other men whom I knew in New York.

I had the good fortune to talk with Mr. Bryan a number of times on important matters when he was Secretary of State, and to hear him speak on several occasions. He was by far the most impressive man I have ever met. I have never seen a man who conveyed to me such an impression of majesty. That magnificent head; those handsome eyes; that mobile mouth; that attitude at once composed and alert; that facial expression, benignant, self-reliant, kindly and yet strong, and that wonderful voice—all combined to produce a fascination at first which mastered me. But I was soon amazed at the superficialness of the knowledge that he possessed, and the shallowness of the ideas that he advanced. I think it was Sydney Smith who said of Webster, "No man can be as wise as he looks." I do not know about that; but I do know that William J. Bryan was not as wise as he looked.

During the first year of my duties as aid for operations

the Japanese situation and the Mexican situation occupied my attention continually. Of the two, the Japanese situation was the more important, the Mexican situation the more exasperating. My diary contains many notes concerning these matters, some of which are highly interesting, but which it would be improper to publish now. I was much surprised at some things that happened, and I amuse myself occasionally now by reading from my diary the impressions which they made upon my feeble intellect. Those happenings made my intellect feel extremely feeble, because they confused it so. My great source of comfort when I was unusually confused was John Bassett Moore, then counselor of the State Department, who occupied a position in the State Department analogous to mine in the Navy Department. I think I was a source of comfort to him also, because sometimes he would say to me, "Now, Admiral is n't it awful? now, if you think about it, is n't it really awful?" I would tell him that I thought it was awful, and my assurance that it was awful seemed to comfort him. He was the greatest authority in the United States, and almost in the world, on international law.

Not very long after the new administration came in, the secretary of the navy started his project for educating the enlisted men. All naval officers were sympathetic with this idea, because we knew that the better educated a man is, other things being equal, the more efficient he is. Of course this knowledge has been held in armies and navies for more than two thousand years, and the subject is one which has continuously engaged the attention of military and naval commanders. It has always been recognized as one of the most important matters connected with armies and navies, and is one on which many books have been written. But while military and naval commanders have realized the necessity for increasing the knowledge of the men under their command, they have always realized that it was merely a means to an end

and not the end itself, and they have realized that it is possible to exaggerate the importance of the question, great as that importance is. In our navy we had at one time gone to greater lengths, I think, than in any other army or navy. This was when the training system of Admiral Luce was in full flower. The necessity for meeting the actual demands of practical naval life had resulted in cutting down a great deal of Luce's system; but this was not accomplished until after a tremendous amount of discussion pro and con by the officers of our navy.

The subject of the education of the enlisted men was therefore a subject on which we were very much up to date. In all the navy the man who had gone into this subject the most profoundly, except Admiral Luce, was Captain William F. Fullam, then aid for personnel. Fullam and I, in particular, and the other two aids besides, gave our hearty support to the Secretary's ideas, therefore; but it soon seemed to us that he was going further than even Admiral Luce. The Secretary, however, had the courage of his convictions, and instituted a system of education of the enlisted men. I am informed that the system initiated has been gradually coming into disuse, and that now the matter of the education of enlisted men is virtually in the same state that it was in before.

One of the projects which I tried very hard to induce the Secretary to support was that of a Council of National Defense, analogous to the Council of Imperial Defense in Great Britain, to be composed of certain cabinet officers, certain senators and representatives in Congress, and certain army and navy officers. A bill to establish such a council had been introduced by Representative Richmond Pearson Hobson, and was intended to prevent misunderstandings on important military and naval questions. This measure had the support of the War Department, the General Board of the Navy and the

Army and Navy Joint Board of which Dewey was the head. I was never able to make the Secretary think favorably of such a council.

In the latter part of this year I read "The Great Illusion." It is a masterly book, and points out clearly that war is unprofitable in the long run. Of course it is. So is burglary, so is sin, and so is the indulgence of most human passions. This book ignores the existence of human passions, and is virtually based on the false assumption that the whole effort of everybody's life is to make money. It seems to me that the great illusion which this book really discloses is the illusion in the author's mind that human beings are entirely different from what they basically are.

I see the following entry in my diary:

Dec. 31. End of 1913! Trying to get Secretary to give Capt. Bristol sufficient authority to get a good start for aeronautics. I think Sec. will do so in the end, but Bristol seemed quite discouraged last night, & talked of giving up the job. Persuaded him to sleep on it: this morning he seems better.

Shortly after becoming aid for operations I took up the matter of *aéronautics*. I had become increasingly impressed with the necessity of our developing *aéronautics* as quickly as possible, thinking that it would be a tremendous assistance to the fleet, especially for preventing actual invasion of the coast by the means which I had suggested for preventing invasion of the Philippines. I found that the Navy Department had done little in comparison with what foreign navies had done, and that there was little prospect of doing much more. There was a captain in charge of aviation, but after several conversations with him, I saw that his mind was more occupied with making certain inventions connected with *aéroplanes* than with the subject of developing an *aéronautical* service. I finally realized that I should have to get some new blood in; but it was not easy to find an officer who was available, who had the necessary

ability, and who was willing to take up his time on shore duty with such a new and untried thing.

Finally I got hold of Commander Bristol, who had just returned from a cruise in Asia; but I found that he was not at all enthusiastic about taking up aviation, and that he wanted to become director of naval intelligence. After some time I succeeded in impressing Bristol with the truth that the very fact of this being a new departure was the best possible reason why he should assume the duty and not discard it. I told him that I considered it the most important thing for the navy to take up, because aëronautics was the weakest place in the navy, and because a man would have an opportunity to do real constructive work. So firmly was I impressed with the importance of aëronautics that I seriously entertained the idea of asking the Secretary to let me give up the position of aid for operations and take up aëronautics as my sole duty.

Finally Bristol consented, and I got him ordered to special duty in the Navy Department. I could not get an office for him for a long while, so that for nearly a year he occupied half of the big desk in my office. This was most inconvenient for me and for him as well, because when any important official came in, such as an ambassador, minister, general, or admiral, I had to ask Bristol to go out.

On January 27, 1914, I went to Hampton Roads and embarked on board the *Louisiana* to take a trip to Key West, in company with the *New Hampshire*, for the purpose of testing my "prism system" of target-practice and gunnery. On February 4, while near Key West, I fired sixty-eight seven-inch shells at the *New Hampshire*. The experiment was a success in all ways, except that the gyroscopes failed to keep the prisms vertical. I thought that this could be rectified and I still do; but up to the present time I have not had an opportunity of taking up the invention again. I expect to do so soon and to make it a success.

Under date of Sunday, March 1, 1914, I see the following paragraph:

I wrote a letter yesterday, to Mr. Padgett, which I asked Mr. Roosevelt to sign, transmitting a copy of information that the German fleet in its autumn cruise will comprise certain numbers of vessels of various kinds,—and pointing out its enormous superiority to our fleet and that this superiority was going to increase each year. Mr. Roosevelt signed it and it was mailed.

The information received was to the effect that the German Fleet at their manœuvres would have twenty-one battle-ships, three battle-cruisers, five small cruisers, six flotillas of destroyers (that is, sixty-six seagoing torpedo-vessels) eleven submarines, an airship, a number of aëroplanes and special service ships, and twenty-two mine-sweepers, all in one fleet, all under one admiral, and manœuvered as a unit.

Having had my alarm excited some years ago in regard to the German Navy, and feeling confident that its strategical control was much better than ours, this information came to me with that kind of shock which one feels when bad news that is expected finally arrives. Here was the fact that not only was the German Fleet numerically larger than ours in all the important units, but that it already had incorporated in it, and was using in its strategical and tactical drills, agencies that were hardly even in the experimental stage of our navy.

When I read about those manœuvres, and realized that the necessary planning had been done years before in an office in Germany like mine in the United States, I felt as an amateur is apt to feel when he sees a professional at work.

To quote from my diary:

March 16. Principal interest last week—to me—lay in paper of General Board, showing that the Dept. had taken no steps to put into effect the recommendation we made to Sec. last April, in the form of an Administrative Plan, by which the Dept. could get the Bureaus to take steps preparing for war. etc., etc.

Mar. 19. Took to Sec. Daniels the paper of G. B. showing that Dept. had no plan or system for getting prepared for war. I argued for half an hour. 'I might as well have tried to scratch a diamond with an iron file! I could not make him see that Dept. is not really ready *now*! I could not make him see that the G. B. merely *recommends very* general plans, & that these have no effect, unless the recommendations are *acted on*!—Later, I talked to Asst. Sec. Roosevelt. Of course, he understood the principles at stake.

Mar. 25. . . . Today Mr. Franklin Roosevelt & I concluded our (tentative) plan for the combined fleet & Army maneuvers next August, I interviewed Asst. Sec. War, Gen. Wood, Gen. Weaver & Gen. Mills about it—They were delighted! At end conference, concluded to appoint two navy and two army officers to work out details.

Monday, Apr. 6. Feeling as to stopping of wine mess by Sec. is not one of surprise. Officers think it unwise, & that the effect will be to influence officers to smuggle whiskey & cocaine on board, & to take meals on shore, where they can drink whiskey—instead of wine & beer on board.—Sec. approves Sen. Weeks's proposal to start navy line of freight, mail & passenger ships.

When I received the secretary's order six weeks later, I expostulated orally, and then wrote him a very long letter concerning it, dated May 27, 1914. My letter was caused not so much by his prohibition of alcoholic liquors as by the way in which the order was expressed, and by the letter of the surgeon-general, on which the secretary's order was largely based. What excited my indignation was not the prohibition, but the fact that the Secretary's order and the surgeon-general's letter were so expressed as to give two very incorrect impressions. One impression was that the Secretary's order abolished the use of liquor in the officers' messes on board ship, whereas it merely abolished the use of wine and beer; whisky and other spirituous liquors had been abolished fifty years before on the initiative of Commodore Foote of our navy. The other impression made by the surgeon general's letter was that insobriety among the enlisted men was a negligible quantity, because they were not allowed liquor,

and that they were in a much better state in the matter of sobriety than the officers were, who were allowed liquor. The letter of the surgeon-general was an insult to the navy and every officer in it. Near the close of my long letter, and in suggesting certain possible ill results, was the sentence, "Another effect would be an increased temptation to use cocaine and other drugs." This sentence was misquoted later, as will be narrated.

At this time Badger was in command of the fleet, and Fletcher was second in command. I desired to relieve Badger when the end of his service should come, although the position of commander-in-chief of the fleet was not so important as that as aid for operations. For this reason some of my friends tried to dissuade me. My reason was, as I frequently stated, that I thought the older officers should show the example to the younger officers of applying for sea duty, and that it was bad for the younger officers to get the idea that shore stations were more important than sea stations. Personally, I did not desire the position, principally for the reason that my wife's health was becoming increasingly delicate. I made no official application, but I told the secretary that I should like the position, and that Fletcher would like to become aid for operations, with the view of becoming commander-in-chief later, when I should retire in June, 1916. Fletcher and I were fast friends, and we had discussed this arrangement several times together. Fletcher was a year and a half younger than I.

Some time in April, 1914, I asked the Secretary to let me exchange with Fletcher and take command of my old division. I fully expected to be commander-in-chief although the Secretary had made me no promise. I was senior to both Winslow and Fletcher, who were my only competitors. I knew that Fletcher ought to have command of the fleet in case he wished it, because of his recent excellent service in Mexico. Both Dewey and Wainwright had told me this, and I had agreed with them, and I had told them so, and several others besides. But

Fletcher had told me positively that he was willing to be aid for operations until I retired.

Under date of April 30 is the following entry in my diary:

Sec. Nav. in accord. with my request telegraphed Fletcher, asking if he would like to change places with me.

May 1. Fletcher answered above dispatch, saying he would *not* like to become aid for operations, as he wished to succeed present C. in C. in command of fleet!

This telegram amazed me beyond words. I knew Fletcher well enough, however, to feel sure that something had happened since the time when he told me that he would like to become aid for operations and have me take command of the fleet. I told the Secretary so, and said I expected to receive a letter from Fletcher explaining. In a few days I received a letter from Fletcher, saying that just before receiving the telegram he had seen an officer fresh from Washington who told him that he knew positively that the Secretary was to make Winslow the commander-in-chief, and that this was his reason for answering the telegram as he did. *I told Secretary Daniels the substance of Fletcher's letter.*

To quote from my diary:

June 12. Admiral Dewey seems to have suffered a slight stroke. N. Y. *Sun* publishes editorial on my "Diplomatic Responsibility of Naval Officers" published in *Institute*.

June 15. Sec. Nav. told me the accounts published in morning papers were correct—that he is going to make Fletcher C. in C.—I told him I could make no objection—that I had continuously praised Fletcher as a fine admiral—& that he could make no mistake in making Fletcher C. in C.—I also told him that all the G. B. except Capt. Shoemaker had voted (informally) when I put the question—that the position of Aid for Operations was much more important than the position of C. in C. of fleet, although the position of C. in C. was much the more pleasant & desirable. Also that I held a position exactly like that which is called "First Sea Lord" in the British Navy, and Chief of Staff in other navies & in armies.

July 26. . . . Serbia has defied Austria's ultimatum. Russia must help Serbia & Germany must help Austria! Wonder how war can be avoided.

July 27. Big European war seems to hinge on whether or not Russia comes to aid of Serbia.

I asked the Secretary for permission to spend the month of August in Newport with the General Board instead of taking the customary month's leave. He gave permission, and on July 29 I started for Newport. I reached Newport on July 31.

July 31. Reached Newport and reported to Prest. War College for duty. War imminent.

Though the war college was under me as aid for operations, yet Admiral Knight was my senior officer and senior officer of the General Board, besides being president of the war college and commandant of the second naval district.

The afternoon papers of July 31 were so positive that war was to be declared as to impress me with the necessity of acting immediately and getting the navy prepared as soon as possible for war. Although I was not a profound student of European affairs, I knew that Germany and Austria on one side, and Great Britain and France and Russia on the other side, had been bitterly hostile for several years, and that only the most skilful diplomacy had kept them from flying at one another's throats. Furthermore, it seemed to me that, because of the German character and the chaotic condition of Maritime International Law, the United States, as the greatest maritime country after Great Britain and Germany, could hardly escape from being dragged into the war.

So I decided that evening to request Knight to call a meeting of the General Board as early as possible the following morning, and to urge the board to write a letter to the department, pointing out the danger of our being brought into the war, and urging the department to take immediate steps to put the navy on a war footing. I

thought of suggesting to the department that the President be urged to call a meeting of Congress immediately, but I realized that such an action might be considered as too great an assertion of military initiative, and so I gave up the idea.

To quote from my diary:

Aug. 1. Gen. Board—or rather the members present here—Knight, Fiske, Knapp, Hood & Shoemaaker—sent letter to Dep't, pointing out possible causes of danger in regard to European nations, especially in matters connected with our neutrality—& concluded letter by recommending that all the battle-ships (except such as are needed in Mex. & Caribbean waters) be sent to their home yards, to be docked and gotten ready. I also sent a letter recommending this, as Aid for Operations & referring to G. B's letter.

I think this was the first step toward preparedness that was taken in the United States.

CHAPTER XXXV

THE UNPREPAREDNESS OF THE NAVY

I REMAINED at the war college throughout the month of August, 1914. Naturally, the subject of the war occupied our minds virtually all of the time. We all realized that a situation of the utmost possible gravity confronted the United States. We knew that Russia and France had been defeated tremendously in the two last wars in which they had engaged, and that the fault had been wholly theirs. Russia had proved in her war with Japan that she was incapable of fighting successfully in a modern war, and France had proved the same thing forty-four years before. Russia's defeat had been so recent as to show there was small probability of her being able to fight effectively; and although France had had forty-three years in which to get ready for war, we knew that she had not been preparing as Germany had been. We saw little to make us believe that France was in good condition. The most discouraging single thing was the fact that one man, Camille Pelletan, had been allowed almost to ruin the French Navy in four years. What could such a fact prove except that there was something radically weak in the French nation? We knew of the Dreyfus scandal, and of the many political and social scandals in which people occupying high position in France had been involved. Regarding Great Britain, we know that her navy was the best in the world, but we had some reasons for supposing that it was not quite so efficient in point of the utilization of modern scientific methods as the German Navy. As to the British Army, we knew what Lord Roberts, Lord Kitchener, and others had said, and we believed what they said. We knew how the British nation had treated Lord Roberts, and this

did not give us much hopefulness as to what Great Britain could do. We knew also that Germany was the most efficient nation in the world, and that she made a business of war not only in the army and navy, but also in the entire government; so that Germany was prepared for war not only militarily, but economically. We knew that not only was she better prepared for starting war, but that she was better prepared for waging war, because she had trained men to handle the army and navy; whereas in Great Britain and France the army and navy were handled by politicians, and in Russia by grand dukes.

But the most discouraging single conviction was that Germany would not have gone into the war unless she felt absolutely sure that she would win it. We knew the methods of the German General Staff, because those were the methods which we at the war college were trying to learn. We knew that all the nations that would fight Germany would fight her by methods which they had learned from Germany and in the practice of which they were less skilled. We knew that Germany had a system of getting intelligence from other countries by means of secret agencies; so that it was virtually impossible that Germany could be laboring under many serious misapprehensions in regard to her antagonists. We knew that Germany was "out for the stuff," just as much as any highwaymen that hold up a railroad train. We knew that Germany had made a careful "estimate of the situation" in regard to Denmark, and after that, had deliberately attacked her with success in 1864. We knew that she had done the same thing to Austria in 1866. We knew that she had done the same thing to France in 1870. We knew that since then Germany had been preparing not only militarily, but economically, and we felt convinced that she had first made an estimate of the situation in regard to Great Britain, France, and Russia, and had then deliberately attacked them in the light of that estimate. Therefore most of us, including myself,

concluded that the chances of success were greatly in favor of Germany. Being convinced of this, and knowing Germany's hatred for the United States, we saw ahead of the United States a situation of the greatest possible peril.

I left Newport on the evening of August 30, and arrived at the Navy Department at nine o'clock on the morning of September 1. I expected to find an atmosphere of tension and excitement. I found perfect calm. No one seemed to think that anything in particular had happened or was going to happen. The officers with whom I talked expressed a mild surprise that the administration had not called an extra session of Congress and started to get the army and navy ready; but as most of these officers were in positions in which their whole duty was to carry out orders received from superior authority, they seemed to feel at ease. Some of the higher officers, however, were distinctly uneasy.

My diary says:

Sept. 1. Reported return to Sec. Had good talk with Sec. & tried to impress him with seriousness of fleet's unpreparedness. I doubt if I succeeded. I explained target practice, etc. Sec. has created office of "Aid for Education," & is much stuck on idea! Gosh!

I suddenly realized that during the month of August, 1914, when the whole civilized world had been thrown into the maelstrom of actual and threatened war, most of our fleet had been kept in Mexican waters, instead of being sent North and got ready, and that the Secretary was carrying out as an important project—not the preparing of the fleet, but the establishment of an elaborate system for educating the enlisted men. He had ordered Captain George R. Clark to assume the duties of aid for education, and had given him as an office, the large room next to mine, formerly occupied by the aid for personnel. By this time the position of aid for personnel had become vacant.

The position of aid for personnel was analogous to that of second sea lord in the British Navy and chief of the naval cabinet in the German Navy. In the German Navy the Navy Department was divided into three parts, each presided over by its appropriate chief. Of these chiefs the chief of staff did the planning; the chief of the naval cabinet issued the orders to the officers and men; and the minister of marine provided the material in the shape of ships, guns, etc. These three officials reported to the kaiser direct, and received orders from him direct. The kaiser was the commander-in-chief of the navy and the army, as is our President. In Germany there was no intermediary between the commander-in-chief and the forces which he commanded. The German system worked very well. (I wish we had it.)

In the early part of September my diary deals mostly with the situation in Mexico, with what to me looked like the inefficiency of the State Department, and with questions of international law. An international law board had been formed to give advice to the State Department when international law situations came up. One of the members of the board was a civilian; the other two members were Captain H. S. Knapp, and Captain J. H. Oliver of the navy.

My position soon became excessively disagreeable. I think that the time between the first of September and the seventeenth of December, 1914, when I gave my testimony to Congress, was the unhappiest time in my life. If I could have had the support of Admiral Dewey, it would have helped me a great deal; but Admiral Dewey at this time was suffering from the effects of the partial stroke which he had received on June 12, and had been warned by the doctors not to exert himself in any way either physically or mentally, and, above all, to avoid all causes of excitement. He was seventy-seven years old, and was never again the same man after his attack. He was always kind to me, almost affectionate, and continually assured me of his approval and of his wish

that he could help me. He often said something like this, "I wouldn't have your job for anything in the world; but you're the best man we have for the job, and you've got to hold on to it." I was very unhappy indeed. I could see the German machine smashing its way across the mineral-bearing part of France, crushing the comparatively improvised machines of England and France, and threatening the very existence of the United States—and we watching the spectacle as a child watches a fire spreading.

Some quotations from my diary are:

Sept. 12. At Baltimore today, Sec. State said new era of Peace is about to dawn!! Made out & out peace speech! Gosh. This foreshadows his attitude & that of Sec. Nav. in coming contentions as to lessons of this War towards U. S. Army & Navy!

Sept. 14. Fletcher came in today. Dined together, & trying to arrange program for fleet. Agree that trouble is not with Mr. Daniels, as an individual, but with the fact that he is given absolute & uncontrolled power over a great machine he does not understand.

Sept. 20. I am elected member "National Institute of Social Sciences." Good. This is an honorable distinction, as the membership is elective, & limited to those who have done something distinctive for humanity.

Sept. 24. After conference with Gen. Wotherspoon, Chief of Staff of the Army, I tried to get Sec. to see the wisdom of putting more Army at Vera Cruz, & taking away the navy. I tried to show the reasonableness of this plan, from all points of view, European & Mexican, military, national & international. From each separate standpoint, the wisdom of what the Army & Navy have all the time advised becomes apparent. All of this Mexican tragedy would have been avoided if the recommendations of the Army & Navy had been followed in this Mexican matter, for it is a subject of which they know more than anyone else, by reason of their acquaintanceship with the Spanish-American character, & the fact that an important factor in the Mexican situation is the military factor. There seems to be almost a determination to deny the fact that the military ingredient exists in our national & international life.

Sept. 26, 1914. Sec. still absent, also Asst. Sec. . . . I told Lansing—Counsellor State Dept.—that if the State Dept wore away the efficiency of the navy by keeping the fleet divided, backing up State Dept's comparatively unimportant policies in places like Haiti & Mex., it may some day need an efficient navy to back up an important policy, & find there is no efficient navy, wherewith to back up that policy.

Sept. 28. Sec. Nav. & I—and thousands of others, witnessed flights & turns & twists in the air of the aviator Beachey.—Bristol & I want 2 million next year for air craft.—I tried very hard to impress Sec. with gravity of situation as to unpreparedness of fleet.

Sept. 29. I told Sec.—(trying to get three ships sent north from Mexico in place of three ships just going there) that—if public attention were called anxiously & critically to the navy, because of antagonistic relations with Germany or other country,—that the navy could not stand inspection, because it had been kept so divided up for a year & a half.

On October first I had a talk with the secretary in relation to certain inventions made by Isham. I told the Secretary that I considered that most of Mr. Isham's inventions were not at all practical, but that one of his inventions, a diving-shell, ought to be given a careful trial. I explained that Isham claimed that his shell was so shaped, and his fuse so constructed that if the shell struck the water, say one hundred feet short of a ship, it would not ricochet above the water, but would dive, and strike the under-body part of the ship and explode; and that, even if it missed the ship, it would explode about a second after striking the water, and near the ship. I told the Secretary that this would be a very valuable weapon for fighting destroyers and submarines and even battleships if it could be made to work. I told him also that I thought that it could be made to work; that I was confident that I, for instance, could make it work. Isham was backed by Representative Hobson, the hero of the *Merrimac*, who had been graduated from Annapolis at the head of his class, and who was a very brilliant man. I recommended that a board try it, and suggested Ad-

miral Badger as its head. The Secretary asked me to be the head of the board instead. I was very glad to be at the head of the board because I was more interested in naval gunnery than in anything else, and thought that I knew more about it than about anything else.

Our work with the Isham shell lasted a year and a half. It was finally stopped when it seemed to me that the main difficulties had been overcome. I think the diving-shell fired against submarines later was virtually the same thing.

For several days my entries are concerned with the Japanese situation in the Pacific, the war in Europe, and indications of possible anarchy in Mexico.

Oct. 8. Told Sec. we need 5000 additional enlisted men more than we need an additional battleship. Some effect made, (I think).

Oct. 16. . . . Representative A. P. Gardner introduced resolution asking for Commission to inquire into preparedness of Army & Navy.

Oct. 18. Representative Gardner's resolution & subsequent speech do not seem to have made much impression. Senator Stone, Chairman Foreign Relations Committee, made inflammatory speech regarding searching of U. S. Merchant ships by foreign men of war, & making German reservists on board parole themselves.

During the middle of October the newspapers devoted a good deal of space to Mr. Gardner's resolution to inquire into the condition of the national defenses, and many of them published favorable editorials.

Oct. 20. *Sec. gave out statement saying Gen. Staff not consonant with principles of this Republic! Gosh!*

Oct. 23. . . . I have told Capt. Smith to be ready to act as my Asst. & to get himself well posted on our war plans. Had meeting in my office with my "War staff," composed of Capt. Roy Smith, Lt. Comdrs. Cronan & Madison & Lieut. Leigh Noyes. We discussed preparation of Dept for war, & "station bill" of officers at Dept in time of war, etc.

Oct. 24. . . . I told Asst. Sec. we must not accept any "palliative" for present situation, but insist on Gen. Staff. He said he would agree if I thought there was any chance of getting it. I told him I thought there was an excellent chance if we held firm. He said he would stop trying to get a "palliative" & would try to get Gen. Staff.

Oct. 26. I held another meeting of my "War staff"—Admiral Knight being present as temporary member. . . . I think I shall try to develop a real & practical War Plan, by which we can mobilize if war comes & then handle our forces.

The entries in my diary for the next few days concern the developments of the war and points in international law. I was brought almost daily into intimate conferences with Counsellor Lansing as to the mutual and co-ordinate actions of the State and Navy departments. I had admired Mr. Moore so much that I was prepared to find in Mr. Lansing a rather inferior person. But I soon discovered that Mr. Lansing, instead of being an inferior person, was a man of great ability, perfect courage, and strict integrity. During all the conferences that I held with him, extending over more than a year, sometimes in his office and sometimes in mine, we never disagreed on a single point except once. On that occasion our disagreement was very slight, and resulted from a misunderstanding in each man as to what the other meant, and it was immediately cleared up.

Oct. 29. . . . I was *amazed* yesterday to get an official letter signed by Chief Bureau Navigation, saying that (showing certain figures), we could cut down the crews of certain vessels & stations & have more men in the navy than are needed!

Before this, I had realized that he and the Aid for Material were siding with the Secretary against me. This was hard to bear.

Park Benjamin's article on my invention "The Flying Fish Torpedo" for discharging torpedoes from aeroplanes, with a fine full-page illustration has come out in *The Independent*. Had meeting of "My War Staff." Discussed Admiralty, Esher, Moody, Swift organization plans.

Nov. 2. Sec. returned & was most cordial and delightful.

Nov. 4. . . . Naval battle off Coast of Chile.—Victory for Germans, showing apparently better strategy, in getting more ships there than British had; also better gunnery. This is due, I think, to precision of German methods.

During the time that had elapsed since my return from the war college, I had done all I possibly could to impress the Secretary with the fact that our navy was not prepared for war with any navy like the German Navy, and that there was an actual danger of our being drawn into the war; but I could make no impression on him. In my efforts I was backed up cordially by most of the General Board and by most of the officers of the navy. I was continually in receipt of letters and oral remarks from officers, in which they praised the stand I was taking and urged me to keep it up. No supporter that I had was abler, more loyal or more energetic than Lieutenant-Commander Cronan, who was my senior assistant in the office, or Lieutenant-Commander Madison, or, in a somewhat less degree, because he was younger, Lieutenant Leigh Noyes. My senior assistant when I first became aid for operations, was Lieutenant-Commander W. C. Watts, a man of splendid ability and character, but whose service with me was not in such difficult times as when his successor Cronan was there. When the time had come for Watts to go to sea, he had recommended Cronan as his successor, and I had such confidence in Watts's judgment that I accepted his advice.

Toward the latter part of October, Cronan advised me to put into an official paper all the advice and recommendations as to preparedness which I had been urging upon the Secretary, and to file the paper in the official records. Cronan said that we were going to get into the war "as sure as shooting," and that if the navy got into the war as unprepared as it was, and if disaster followed, everybody would put the blame on the naval officers who happened to be in positions of responsibility

at the time unless the truth was told and recorded in advance.

I took Cronan's advice, and wrote a paper very carefully on the unpreparedness of the navy. I showed this letter to a number of officers in order that I might have the advantage of any comments or criticism they might make. In regard to this letter I find the following paragraph in my entries of November 5 :

I showed Sec. a paper I had written to him, stating navy is unprepared, & needs more men, more training & a general staff. He made almost no comment on my paper, though he read it carefully.

On the forenoon of November 5 Captain Roy Smith, who was an unrecognized first assistant to me (I could not get a recognized assistant), was in my office talking over with me my projected plan of getting the Navy Department on a war basis, when Cronan came into the office with the last draft of the paper I had written. Smith was already familiar with it, but the three of us talked it over for a few minutes, and then I took it into the Secretary. After the Secretary had read the letter, he returned it to me, and I went back to my office. Smith and Cronan were still there, and I told them of the failure I had met. Then I put the letter on my desk, saying that I intended to speak to the Secretary about it again. I did not do so, however, thinking that it would do no good; and I finally filed it. The date the paper finally had when filed was November 9, 1914.

I have written many papers in my life. This paper was the most important one I have ever written. It read as follows:

NAVY DEPARTMENT,
Washington, November 9, 1914.

From: Aid for Operations.

To: Secretary of the Navy.

Subject: The Navy's unpreparedness for war.

1. I beg leave, respectfully but urgently, to request the at-

tention of the Secretary to the fact that the United States Navy is unprepared for war.

2. It is true that the United States does not expect to get into war in the near future, and is not preparing for war. It is true that nothing could be more unwise than for the country or the Navy itself to become nervous about the condition of war into which most of the civilized world has been plunged. It is true that there is no cause for excitement, and it is also true that even the most timid person can give no specific reason for anticipating war with any given country, at any given time.

3. It is also true, however, that the mere absence of actual certainty of coming war is no reason for neglecting preparation. Some persons assume that a disposition to make preparation evidences a state of alarm in the mind of the person who proposes to make preparation. Yet such an assumption is entirely illogical. Wise men and wise nations show their wisdom in no better way than by taking wise precautions against possible dangers. The prevalence of smallpox induces wise people to guard their families against it by vaccination. They do not expect to be attacked by smallpox, but nevertheless they think it wise to take precautions against it.

4. Because of the position which I have occupied for more than a year and a half as senior adviser to the Secretary of the Navy, it has been my duty to keep myself informed, so far as I have been able, of the condition of the various nations in relation to war, the effects of that condition upon us, the strength of our Navy compared with other navies, and the degree of probability of our being dragged into war. .

5. The present condition all over the world is one of general upheaval. The state of unstable equilibrium which the great powers maintained for many years with great skill and care has been at last upset. A conflict is going on, very few results of which can be foretold. One thing probably can be foretold, however. I mean that it can be foretold that the conflict will be violent and also will be long, involving other countries than those now taking part, and followed, even after the war at present outlined has been ended, by a series of more or less violent readjustments of boundaries, insular possessions, treaties, and agreements of every kind.

6. Surely he would be an optimist who would expect that a state of general peace will come in less than five years. During



Photo. Harris & Ewing.

For
Admiral Fiske
with loyalty
W. J. Cronin

the next five years we must expect a great number of causes of disagreement between this country and other countries, and periods of tension between this Government and others; periods like that preceding the Spanish War, needing only a casualty like the blowing up of the *Maine* to precipitate a conflict.

7. In my opinion, as your professional adviser, and in the opinion of every naval officer with whom I have talked, the United States is in danger of being drawn into war and will continue to be in danger for several years. And when I say war, I do not mean war of the kind that we had with Spain, but war with a great power, carried on in the same ruthless spirit and in the same wholesale manner as that which pervades the fighting in Europe now. It is true that I can not specify the country with which war is most probable, nor the time, nor the cause. But my studies of wars in the past, and my observations of conditions at the present time, convince me that if this country avoids war during the next five years it will be accomplished only by a happy combination of high diplomatic skill and rare good fortune.

8. Would it be wise to base all our hopes of national safety on such a frail foundation? Would it be wise to close our eyes to the dangers that confront us? Would it not be wiser to look the dangers clearly in the face and take reasonable precaution to avert them?

9. Comparing our Navy with the navies which we may have to meet in war, I find that our Navy is unprepared in three ways:

10. First, it has an insufficient number of officers and enlisted men. The number of officers can not be increased—that is, the number of suitable officers—because it takes four years to get a midshipman through the academy and several years afterwards to train him. But the number of enlisted men can be increased, and very quickly. It has been said that in time of war we could add to our enlisted personnel from the Naval Reserve and the Naval Militia. To my mind, this is a visionary notion, with no basis of fact to rest upon. We have been working to get a naval reserve and a Naval Militia for more than 30 years; scores of expedients have been tried, and the only result has been no naval reserves at all and less than 7,000 incompletely trained militia. Possibly we may do better with the Naval Reserve in the future than in the past, but only possibly, not probably. All reasonable expectation for the future is based,

and must be based, on the experience of the past, and the experience of the past shows us that to place dependence on the Naval Militia and the Naval Reserve is to place dependence on hope, not reasonable expectation. The only men we can depend upon for naval work on board our ships are men who are enlisted regularly, who have been trained on board our ships, and wear the naval uniform. But even if we would expect reasonably to get a naval reserve in the future, the fact remains that we want enlisted men right now. To man the ships which should be used in war we need 19,600 more men.

11. The second way in which I find our Navy unprepared is in departmental organization. Our ships are well organized and pretty well drilled; the fleets are well organized, though not very well drilled, but the department itself is neither organized nor drilled in a military way. Perhaps this is nobody's fault, and may be attributed to the fact that our Navy has never had to fight a serious enemy—certainly not in 100 years. The people of the country have naturally devoted their energy along the paths of most obvious profit, and have not been confronted with any obvious military dangers. But in my opinion there is an obvious military danger at present, and the Navy Department should be organized to meet it. The organization which other navies and all armies of great powers employ to meet this danger is known, in English, by the phrase "general staff." In different languages, of course, the words are different; but the meaning is the same. In Great Britain it is called the "Board of Admiralty." This "general staff" has as its first duty preparation for war; and as its second duty, the conduct of war when war comes. In making preparation for war, the "general staff" makes war plans. These war plans are of two kinds, general and specific. The general plans are simply analyses of what should be the general conduct of the Navy in case of war; and the specific plans are plans in which the general plans are worked out in detail. Besides these general and specific plans, however, the "general staff" devises means whereby information regarding these general and specific plans shall be given to the various executive bureaus and divisions, corrected up to date; and whereby the various executive bureaus and divisions shall always be compelled to be ready to carry the various parts of those plans into immediate effect.

12. In directing the conduct of a war, the "general staff,"

under the direction of the minister, sees to it that all information is kept up to date and supplied to the various commanders, and that all machinery for carrying out their decisions is kept in working order.

13. Our Navy Department has no machinery for doing what a "general staff" does. The closest approach to it is the General Board, which, as part of its numerous duties, "shall devise measures and plans for the effective preparation and maintenance of the fleet for war," and "shall prepare and submit to the Secretary of the Navy plans of campaign," etc. The General Board does carry out these duties, but the plans that it makes are general and elementary. It exists entirely as an advisory board to the Secretary of the Navy. It is highly valuable; but, as its name indicates, it is only a "General Board." It does hardly 1 per cent of the duties that a "general staff" would do. Having no executive authority and no responsibility, and being called upon to do a great variety of work, it has not the time to prepare specific plans, and has no means to see that even its general plans are ever carried out. If we compare our General Board with the "general staff" of any other country, or with the Admiralty of Great Britain, and when we see what those "general staffs" have been accomplishing during the past three months, we must become convinced that unless we go on the theory that we shall always have peace we shall be whipped if we ever are brought into war with any one of the great naval powers of Europe or Asia. We shall be like the lawyer who has not prepared his case when pitted against the lawyer who has prepared his case. We shall be as the French were before the Germans in 1870.

14. The performance of the German Army during the last three months is the greatest triumph of the human mind and the human will that has ever been accomplished. It is not the triumph of one mind or one will, but the triumph of several million minds and several million wills, coordinated by a general staff with a degree of perfection that the world has never before seen. This pace being set, any navy not provided with a "general staff" is a navy not provided with "the most modern improvements."

15. The third way in which I find our Navy deficient is in training. This deficiency in training is due not to lack of spirit or ability but to a combination of the two preceding causes; that

is, to insufficient personnel and lack of departmental organization, to which must be added lack of small ships. I mean that because we have had not enough small ships to do work on the coasts of Haiti, San Domingo, and Mexico, because our ships have been insufficiently manned, and because the Navy Department has had no "general staff" which would devise and carry out a progressive system of training, lack of progressive training has resulted. When I say lack of progressive training I mean lack of training such as the Germans and other nations have. I mean lack of training that secures a high degree of skill. If we are forced into war with a navy like Germany's or England's or Japan's, our training should be at least as good as theirs; or rather our skill should be. It is impossible for me or for anybody to compare exactly the skill of our Navy with the skill of other navies; but, on the theory that cause produces effect, we must admit that we have not had nearly so good a system to produce skill as other navies have. The developing of skill in the navies and armies of the other great powers is carried out with a vigor and persistency that we can not approach, and has been directed by an organized intelligence that certainly has no superior and probably no equal in any other branch of human effort.

16. The subject of the improper organization of our Navy Department was exhaustively analyzed by the Moody Board and afterwards by the Swift Board in 1909. Certain recommendations were made to remedy the evils that they found. These recommendations have not been carried out. They were, in effect, to establish a "general staff," though the words "general staff" were not used. In my opinion, the failure to adopt those recommendations was serious, and will invite disaster if a great war comes.

B. A. FISKE.

CHAPTER XXXVI

TESTIMONY BEFORE CONGRESS AND CHIEF OF NAVAL OPERATIONS

THE entries in my diary for the month of November are concerned mostly with endeavors to induce the Secretary to ask Congress to ask for more enlisted men for the navy. My main point was that the navies of Europe were the navies of military countries, and included large reserves of seamen who had served in the navy and were very well trained; whereas we had no reserves whatever that were worthy of the name. I talked to him a great deal about the necessity for skill in the enlisted men, and showed that, no matter how good a gun a man might fire, that gun could do no service unless its projectile hit the target, etc. I pointed out that even trained reserves could not be as good as regulars, and I illustrated this by the German naval victory off the coast of Chile, in which the German ships were manned by regulars and the British by reserve crews. My entries show that I had almost daily talks with the Secretary on this matter, but could make no impression.

Under date of November 14 were many entries from which I will quote one as showing the general character of the entries in my diary during this period:

Nov. 14. . . . Sec. and I had a very free and frank talk. Interview ended with my agreeing to return their letter to Gen. Board; suggesting Board omit any mention of 19,600 more men.

Nov. 15. Sunday. Admiral A. T. Mahan in church this morning. Looked well, but a little older. He joined in all the singing.

Nov. 16. Going down to the Fleet this evening with the

officers of the Target Practice office, to see the target practice of the Fleet.

Nov. 23. Returned from the Fleet this morning. The target practice was very much obstructed & delayed by thick weather. What was done did not seem particularly good. And the maneuvers were not very skilfully performed. Lack of practice was evident throughout. And there were only 11 battleships & 12 destroyers present; no submarines. This is the unfortunate result of our Mexican policy.

Nov. 27. British battleship *Bulwark* sunk in Thames River. This seems incredible. My guess is that it was done by a submarine. . . . Sec. Nav. is against any increase of enlisted personnel! A movement is started by prominent men in N. Y. to support Repr. Gardner, & investigate state of national defenses!!!

Nov. 28. U. S. Safety League is formed in Chicago! Taft, Miles, Goethals, etc., are members.

The entries in my diary for several days deal with my endeavors to get more enlisted men for the navy and to prevent battle-ships being sent into the Pacific.

Dec. 2. Continued agitation in papers concerning our unpreparedness. . . . Adm. A. T. Mahan died yesterday of heart disease.

Dec. 3. . . . I am liable to be bounced any day. This issue as to whether or not we have enough men to man the fleet we would use in war, is a most serious issue.

Dec. 7. . . . Adm. Fletcher arrived, in obedience to orders, to testify before House Naval Committee tomorrow. Badger also is to testify. I am quite sure Sec. does not wish me to appear or testify. In Sec's annual report, he says navy does not need any more men, or at least can get along without them, and he will not ask for them. He prints G. B. report, but does not say that he told Gen. Bd. he would not print it unless G. B. left out the part asking for more men. The Sec's report is absolutely the reverse in its character, of my report to him, made only three weeks before; and yet I am his military adviser! One headline is "*Proof of the Preparedness of the Navy.*" (Page 52.)

Dec. 8 and 9. Badger & Fletcher have testified before the House Naval Committee. Committee on Rules refused Mr. Gardner's request to summon officers and others before it.

Dec. 10. Adm. Fletcher was before the House Naval Committee nearly all day yesterday. He brought out many naval needs, but I think he made the Personnel situation too rosy. I am disappointed at neutralness and colorlessness of testimony of Badger.

Dec. 11. Sec. was before Committee yesterday.

My entry under this date makes many comments on his testimony.

Dec. 12. Sec. was before Naval Committee of House nearly all day yesterday. Commander Yates Stirling, comdr. of submarine Flotilla arrived at Dept. having rec'd. orders to testify before Naval Committee as to causes, etc., of submarine failures. . . . Fletcher tells me that—in a talk he had with Sec. this a. m.,—Sec. said he expected to send fleet into Pacific, & keep it there nearly all of 1915!!!

“Dec. 15. . . . Commdr. Yates Stirling was before House Naval Committee yesterday. Asst. Sec. Roosevelt goes today. He was in my office two hours yesterday, getting data, etc., etc., etc. Sec. is very much provoked against Yates Stirling, & has called for all papers that passed between Dept. and subr. flotilla in last year or so.

I was exceedingly disturbed by the character of the testimony given to the House Naval Committee by various officials of the Navy Department. I was exceedingly unhappy. Sometimes I had the feeling which I had so often when I was urging the adoption of the telescope sight—that I must be somewhat insane. Most of the department officials looked at matters very differently from the way that I did, and each touched so lightly on any defects that the combined effect of all was to give the impression to Congress, and therefore to the nation, that the navy was in a high state of preparedness. As I knew that, although the separate parts of the naval machine (ships, guns, men, etc.), were good, yet that those separate parts had not been so put together as to make an efficient machine, I determined, at all costs to me personally, to get the real truth before the nation if I could. I was convinced by this time that the Secretary did not

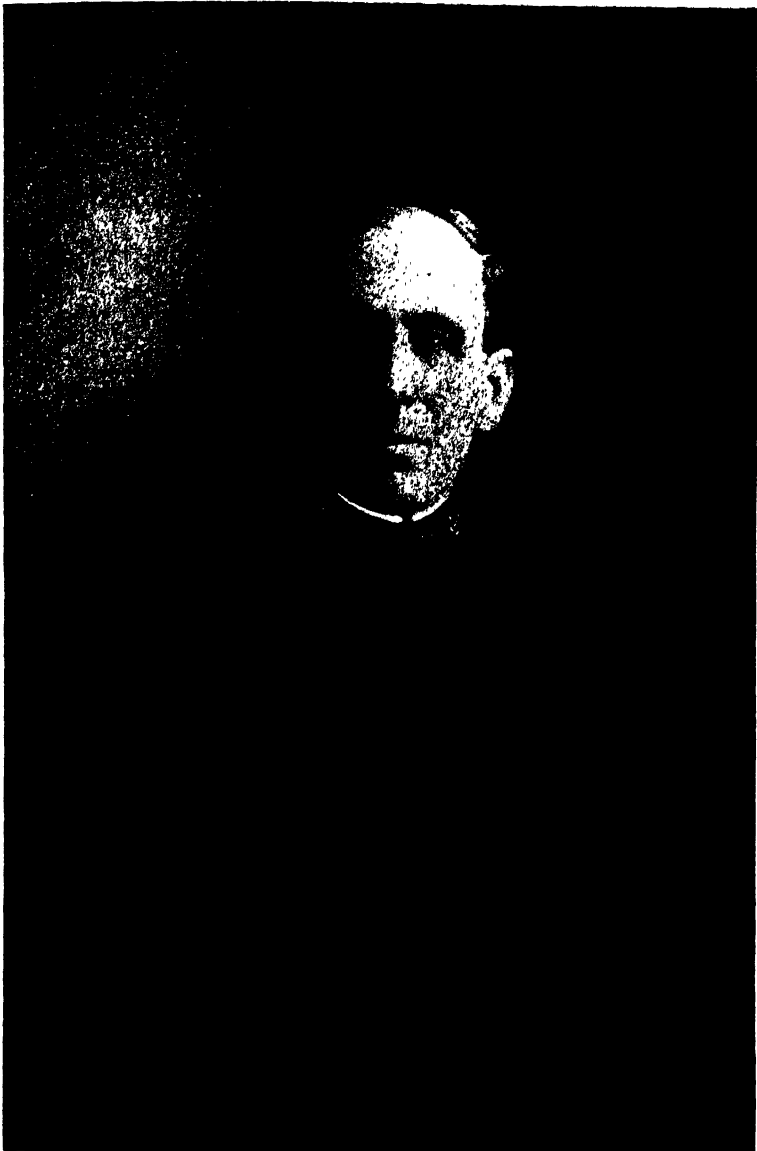
want me to testify before the committee; and yet I was, ex-officio and actually, the man best fitted to tell Congress what was the real condition of the United States Navy *compared with other navies*. I knew that an emergency existed for the navy, that the United States was going to get into the war, and that time and opportunity were being wasted *which could never be redeemed*. I could not see for a long while how I was to get my views abroad. Finally, on the morning of December 16, while shivering in my bathtub, a beautiful idea occurred to me.

My diary says:

Dec. 16. I suggested to Hobson over phone this a. m. that—if he wanted to get straight news about the Army, he would get Committee to call for Ch. Gen. Staff. Hobson answered, "A word to the wise is sufficient," so I got word tonight to appear before Committee tomorrow.

I spent that evening in my office with Lieutenant-Commander Madison, who was the officer on duty there that evening. We discussed the subject of my testimony, and collected some papers which I could use to refresh my memory. Madison and I agreed that the navy could not be got into the same state of efficiency as the German Navy for many years. I told Madison that I wanted to bring out that point very strongly, and we discussed what number of years I should state as the time required, knowing, as we both did, that it was a matter of doubt whether the political influences in the United States would ever permit the navy to be as efficient as the German, and realizing that even if the politicians should all stand aside and permit a general staff to be established, it would probably take that general staff at least ten years to train itself and train the navy. We finally decided that I should say that it would take at least five years to get the navy ready to fight a navy like the German, effectively.

My diary says:



Photo, Harris & Ewing

CAPTAIN ZACHARIAH H. MADISON

Dec. 17. . . . I was before Committee at Hobson's request nearly all day to day, & never received more courteous treatment & more attention in my life—much to my surprise! I certainly startled Committee when I told them it would take 5 years to get ready! Congressman Roberts took me to lunch in Capitol restaurant & I asked him to ask me how long it would take to get navy ready for war & I told him, I would answer 5 years. Roberts took the hint.

The Washington evening papers published most of my testimony, and I got several congratulatory messages over the telephone that evening. The first message I received was from my old classmate and roommate Dorn, who said that my action was the most splendid thing that had been done by any naval officer since the Civil War.

On my walk down to the department the following morning numbers of navy officers, and army officers as well, came up to shake hands with me and thank me. I got to my office at nine o'clock, and found several officers waiting for me. All were most enthusiastic, and each one thanked me as if I had done him a personal favor. About a quarter after nine the Secretary's messenger came in and said the Secretary wanted to see me. All the officers became grave at once, and some of them said, "He is going to fire you." They all seemed to think this, and I know I did. I expected to be sent to some distant place like Olongapo in the Philippines.

I walked into the Secretary's office, and saw him sitting at his desk, with the palms of his hands downward on the table. He was very pale. I said, "Good morning, Mr. Secretary." He answered, "Good morning, Admiral." Then he looked at me fixedly for a few seconds, then spoke to me about some unimportant matter, and then I went out. When I reached my office I found the officers still there, waiting for my return in suppressed excitement. When I told them that nothing had happened, they all expressed their gratification, and dispersed to their various offices.

Dec. 21. My testimony has received very great approval everywhere. *N. Y. World*—Dec. 19 & 20, publishes editorials saying my testimony is the “most helpful” thing that has happened, & that I—alone—show the way to have good navy—by Gen. Staff. Sec. Daniels is polite and suave. He has said nothing, except to ask to see my testimony. I handed it to him today. I have been much surprised and pleased at the number of congratulatory letters, phone messages and oral statements & calls at my office, that I have received;—mostly from officers, but from others—even ladies! Col. Thompson came in to my office & was most flattering & kind in his congratulations. Gardner was the first man to start Preparedness publicly; I think I am the second.

The part of my testimony that attracted the most attention was that which concerned the necessity for preparing immediately, the need for a general staff, the impossibility of expanding a navy quickly and at the same time preserving its efficiency, and the necessity for years of training to make our navy as efficient as the German navy, with its thousands of trained and skilled reserves.

But I took advantage of the opportunity to endeavor to impress the committee with the necessity of developing *aéronautics* for offensive use. My examination in the matter of *aéroplanes* took up several pages in the printed report. I will make one quotation:

Admiral Fiske. The *aéroplanes* which were used in Mexico could just as well have taken bombs and attacked Vera Cruz or Tampico with bombs. And so we must look forward to the possibility of that kind of an attack on our own coast; we must consider the possibility of a fleet, without the assistance of any soldiers, attacking our shores in that way. Warships can carry aerial craft of that kind, *aeroplanes*, certainly; whether *airships* or not we do not know, but we have got to be prepared to meet such an attack. I think in such a case there is no question that they could send their *aeroplanes*—in case of a defeat of our fleet—they could send their *aeroplanes* over the land and make an attack, and possibly an effective attack, without any soldiers, on a city or other locality.

This was an entirely new idea in warfare, but it was carried out exactly a week from that day in the North Sea. British cruisers carried sea-planes to the neighborhood of Cuxhaven, near the end of the Kiel Canal, and lowered the sea-planes into the water. Then the sea-planes flew over the enemy works in the neighborhood and dropped bombs on them.

The entries in my diary during the remainder of December refer mainly to the congratulatory letters and messages that I continued to receive regarding my testimony, and also to my efforts to establish a general staff.

Dec. 27. Sunday. Called on Hobson in p. m. and explained why a Gen. Staff is absolutely essential, if one is to have a navy of maximum effectiveness; though it is not necessary if one is to have merely a navy.

Jan. 3. Sunday. Had long interview in p. m. with Hobson at his residence, in regard to Gen. Staff, etc. I took many documents with me, & Hobson became thoroughly interested. We concluded that it might be better not to attempt to get through legislation for any modification of Aid system, because Sec. would say present Aid system is adequate & that it might be better to propose a new scheme, whereby an addition would be made to present system & additional means be provided to accomplish preparation for war. So I asked Capts. H. S. Knapp, Hood & Oliver, & Lt. Comdrs. Cronan, Madison & Knox to be at Hobson's at 8.30 p. m. We all met there in Hobson's study, & sat till after 11 p. m. when we adjourned. We agreed on program whereby Chief of Naval Operations is to be legislated for & to have 15 assts!!

The entries under head of December 27 and January 3 give the outlines of a good deal of work that Hobson and I did on those days and in the intervening week. The plan which we drew up was drawn up in the light of my knowledge of strategical requirements and Hobson's knowledge of congressional requirements. When the six officers arrived that evening, they came secretly because they were engaged on an exceedingly dangerous mission. I had expected more or less objection on the

part of some of them to certain features of the bill as drawn, but I found that every one of them was enthusiastically in favor of it. We eight men went over the whole subject very carefully, and when we finally came to an agreement, the original memorandum that Hobson and I had planned had been changed but little.

During the discussion that evening it happened occasionally that some one would speak of the power and authority which I would have if that bill should pass. Whenever anybody made such a remark as that, I told him that, if Congress should authorize a chief of naval operations, I was absolutely certain that I would not be the chief of naval operations. I told them that I was positive that the secretary wanted to get rid of me, but could see no opportunity or give any reason for it, because he knew that I was performing my duties to the satisfaction of the navy, including Admiral Dewey; but that if a new office was established by Congress, the secretary then would be perfectly free to appoint any one whom he wished. I told the company that I was like the well-known gentleman who sawed off a branch of a tree at a point between himself and the branch, except that that man did not realize what he was doing, and I did.

Jan. 4. The 6 officers who met at Hobson's last night met in my office at 8.30 a. m. & we drew up on neat typewritten page the proposition agreed on. Hobson came to my office at 10.15 & took up the matter with Sec. Hobson told me later that Sec. declared that if the bill went through he would "go home." How foolish! Now he has the chance to back it up & get back into good opinion of the country. Hobson came to our apartment at 2.20 & told me sub-committee—of which Padgett is chairman—passed the proposition unanimously! Hobson asked me to get him a brief with which to argue matter before full committee Jan. 5. So Madison, Cronan, Dudley Knox & I met in my office from 9 p. m. till 11.15 p. m. & drew up brief, which Knox will leave at Hobson's house at 9 a. m. tomorrow.

Jan. 5. Papers give large space & headlines to action of sub-committee! Dewey is delighted, & told me I might tell Hobson, which I did at 10.30 a. m. by telephone.

Jan. 6. Hobson telephoned me at 1 p. m. that full House Naval Committee agreed unanimously on incorporating in naval appropriation bill the provisions for a "Chief of Naval Operations"!!

With the exception of Admiral Dewey, Hobson, and the six other officers, nobody knew that I or any other naval officer had any connection with this measure.

Jan. 7. Evening papers last night and morning papers today confirm news that House Naval committee unanimously agreed to incorporate in Naval appropriation bill the provision, "There shall be a Chief of Naval Operations." . . . New York papers give great space & comment (sympathetic) to establishment—Bureau of Operation. N. Y. *Tribune* is especially favorable) and the *World*—the leading democratic newspaper, gives the project its first column of first page, headed "Fixed Naval Policy Assured." It must hurt Mr. Daniels very much indeed to see the *World* taking a stand so antagonistic to him.

When the Naval Appropriation Bill came up before the House, the provision for a chief of naval operations was stricken out on a point of order, on the motion by Mr. Mann. This did not surprise us because Hobson had said at the start that it was liable to this fate, being new legislation added to an appropriation bill. Hobson said that he thought he could get the Senate Naval Committee to put it back in the bill; he added, however, that this would give an opportunity for the Secretary to modify the provision by recommending certain changes in it, though he thought that the Secretary would not oppose a provision that had been agreed to by the full House committee.

Hobson's prediction was verified *in toto*. The provision, as finally incorporated in the bill by the Senate Naval Committee, was made to conform to the suggestions of the Secretary. In its amended form it was passed by both houses. It established the office of chief of naval operations in a form which, though it omitted the fifteen assistants for making war plans which Hob-

son and I had suggested, accomplished nevertheless a greater advance than any other naval legislation had accomplished in many years. Most officers said that it was as great a boon to the navy as the act of Congress, in 1880, which authorized the "new navy" in the shape of the steel ships *Chicago*, *Atlanta*, *Boston*, and *Dolphin*.

On March 24 and 26, 1916, I testified again before the House Naval Committee, and made the strongest argument I could in favor of putting back into the appropriation bill the provision for fifteen assistants for making war plans which had been left out in 1914. The subcommittee of the naval committee agreed to do this. When the matter came up before the full naval committee, the committee divided half in half, most of the Republicans voting yes, and most of the Democrats no. As the subcommittee had recommended it, and the full committee had not rejected it, the full committee had to pass it, though half of them opposed it.

This is the organization by which the Navy Department handled the navy throughout the war. The excellence of the system is now admitted by everybody, including the Secretary.

The appropriation bill, as finally passed, contained the provision for the fifteen assistants to the chief of naval operations that had been omitted from the previous bill, after having been included in the original draft of the House Naval Committee in the session previous.

The language of the bill is:

Hereafter the Chief of Naval Operations, while so serving as such Chief of Naval Operations, shall have the rank and title of admiral, to take rank next after The Admiral of the Navy, and shall while so serving as Chief of Naval Operations, receive the pay of \$10,000 per annum and no allowances. All orders issued by the Chief of Naval Operations in performing the duties assigned him shall be performed under the authority of the Secretary of the Navy, and his orders shall be considered as emanating from the Secretary, and shall have full force and effect as such. To assist the Chief of Naval Operations in per-

forming the duties of his office there shall be assigned for this exclusive duty no less than fifteen officers of and above the rank of lieutenant commander of the Navy or major of the Marine Corps.

The office of naval operations with the fifteen assistants "assigned for this exclusive duty" constitutes a general staff.

Before I gave my first testimony, the personal relations between the Secretary and me had been friendly and pleasant, though we disagreed entirely as to the desirability of getting the navy ready for war. Our disagreement on this point was extremely trying to me, for the reason that I liked the Secretary so much as a man. I appreciated his kindness of heart and his delicate refinement. I admired his steadfast adherence to the principles of Christian conduct which he professed, and I was continually tempted to cease from urging him to undertake a course of conduct against which he was resolved. But I often told him that I was the only man in ninety million people to hold before him the military side of the navy, and that I felt it my duty to persist. He always told me that I was right in so doing, and for a long while I thought that I was gradually impressing him with our dangers.

But his report of December 1, 1914, dispelled all my illusions on this point. I saw that I had not impressed him at all, and that the disagreeable and dangerous duty devolved on me of endeavoring to impress Congress and the people. Hence my testimony.

Beginning with the morning after my testimony the Secretary's manner toward me changed entirely. He was always polite, but a cold formality took the place of a warm cordiality; disapproval was intimated in every way, though never expressed in words. But my period of misery had passed. I knew that I had done right, and that my testimony as the official expert of the Navy Department, had roused a powerful minority to a realization of the peril of the nation.

CHAPTER XXXVII

WAR GAME, THE ADMINISTRATIVE PLAN, AND MY RESIGNATION

SOME entries in my diary read as follows:

Jan. 27—On board *Dolphin* in Tangier Sound all day, *Rhode Island* firing Isham shell with Isham fuses in direction of *San Marcos* (wreck) to see if Isham shell would travel under water after striking the water, and then explode after running one second of time. Only one did this perfectly; but this shows principle is correct, and only details are imperfect.

Jan. 28—Returned to Wash. in *Dolphin* this A. M. and then went to Dept. Knight came in, and told me the Sec. was very angry with him for his speech. Yet all Knight did was to tell the truth about the efficiency of the navy! He told only what all naval officers knew, both American and Foreign!

Jan. 30. At my suggestion Hobson called on Dewey in forenoon. Dewey expressed himself in favor of Ch. Nav. Op.—but (of course) does not want G. B. [General Board] wiped out. I pointed out this will not affect G. B. When App. Bill came up in Committee of whole today, Mann (rep. leader) had the provision for Chief Naval Operations stricken out on point of order.

At this time the positions of aid for personnel and aid for inspections had been vacant for some time; so that the entire business of the department was virtually divided between the aid for operations and the aid for material. This does not mean that they did any work independently of the secretary or, in fact, that they did any executive work whatever; they were merely advisers. There was a third aid, the aid for education, but his work dealt solely with education.

Feb. 1. . . . I got Oliver, Knapp and Smith in my office and explained my idea or scheme of making war plans on moving picture basis.

Feb. 2nd. . . . Hobson and Isham putting pressure on me to hurry up Isham test. I pointed out difficulties, etc. In House, practically all the new legislation on App. Bill stricken out on point of order. Plucking Board however, is abolished! Meeting G. B. I explained my ideas about getting up war plans, but did not dwell on photographic features of my scheme. I explained all of it however to Madison.

Feb. 3. . . . Submarine attack on merchant ships making big scare in England. My report as to A. P. Shell and Isham Shell is now printed in A. M. papers. Meeting G. B. I propound my solution (that is, I do in part) of the problem of getting up war plans, using analogy of chess games.

Feb. 4. . . . Meeting G. B. I elaborated my scheme for making war plans, and showed how (if we make them carefully and logically by well played out games) we can decide better by far than any one else, how many ships, men and units of all kinds the navy needs, in order to defend our coast, in war, both defensively and offensively: in other words, how we can ascertain and explain what is (for us) an "adequate Navy."

Feb. 5. Meeting G. B. Discussed war plans. Situation more threatening as to German subms. attack on merchant ships, especially attack on neutral merchant ships.

Feb. 6. Meeting G. B. We agreed that *all* navy, including ships in ordinary and reserve, *must* be ready in 14 days (as a maximum) after declaration of war. Army and Navy Register says Prest. is much provoked at certain officers of A & N who have been talking and writing in opposition to Admin. policy, and that Sec. Nav. has told at least one officer that he is provoked with him and that Sec. feels he is not being supported loyally by other officers.

Feb. 8. . . . Meeting G. B. We have been holding daily meetings and discussing war plans. Sec. said in p. m. that Ch. Bu. Ord. was the only man who had helped him (Sec.) to get mines and mining established!! I got a file of the papers in the case, and showed him that I had started the thing in May, 1913, and that, after the procedure had been determined on, had sent the papers to Material Mar. 31, 1914.

Feb. 9.—Meeting G. B. Discussed war plan, war with

"Black"—I am trying to evolve scheme of plans in which each war plan will consist of a number of "games," which in turn consist of certain "moves" by each side. Of course, mobilization must be a preliminary step—followed by the first move. . . . Lt. Com. Cotten, just returned from position of naval attaché, came into my office and told me about attitude of Japan. . . . Callan O'Lachlan, just returned from trip in *Jason*, giving presents in Europe, came in and told me lots about German naval things.

Feb. 10—Meeting G. B. Discussed War Plans. . . . Lt. Com. Cotten, recently naval attaché in Japan, came to my office and gave me interesting facts about Japs.

Feb. 11. Two years ago today, I became Aid for Operations! Lt. Com. Cotten came in and talked to me about various things in Japan. I asked him a great deal about Gen. Staff in Jap. Navy and he spoke very interestingly and intelligently about it, and I asked him to go into Sec's. office, and tell him about it. Cotten told me that in Jap. the Adm. who is Ch. of Staff, is more highly regarded than the Sec. Nav. who is also a Naval Officer, and usually is of higher rank than Sec. Nav. (Minister of Marine) because his work is more important and difficult from national point of view than Sec. Nav's, which is largely political.

My entries under date of February 12 are taken up with a discussion of the German naval situation. One sentence is, "The significant part of this to me is that if war result, the *strategic advantage* will be to Germany, since (in order to interfere with Germany's action) U. S. will have to send ships near to Germany."

Feb. 15th—Anniversary of our wedding. Had Japanese Ambassador and his wife and other guests at dinner. German situation getting rather serious.

Feb. 16th—Meeting G. B. Discussed War Plans with Black. . . . Farewell dinner given by Capt. Takeuchi, I. J. N. in honor Admiral Dewa. I respond to the only toast, as Senior Adm. present.

Feb. 17th. . . . Dinner at Japanese Embassy. I take in Mrs. Daniels, and wife is taken in to dinner by Admiral Dewa, I. J. N. Beautiful Dinner. *Ash Wednesday!*

Feb. 18. Meeting G. B. European situation worse—also Jap. situation. Also Mexican. Adm. Dewa gave a splendid banquet at Shoreham Hotel, 68 guests. I sat between Sec. War and 3rd Ass. Sec. State. Sec. State sat next host—and after host made little speech, Sec. State—with great bad taste—replied. His speech was foolish, but pleasant because delivered in a very, very pleasant way; but he should have let a naval officer make the reply.

Feb. 19—Meeting G. B. War Plans. Sec. called into consultation Blue, the Ch. Const. Taylor—and the Judge Advocate General to help him draft a letter to Sen. Nav. Committee, asking them to change House Committee's recommend, as to Ch. Nav. Operations. The draft decided on emasculated the provision considerably, but included the legalization of a Ch. of Nav. Operations.

Feb. 20. Situation everywhere worse as to war. The prize essay of Lt. Com. Knox about Doctrine has been sent to all the members Nav. Committees of House and Senate. At annual meeting of the American Society of Naval Engineers, I made the speech—first speech of evening—in reply to the toast—"The Navy."

Feb. 22nd—Washington's Birthday. I had a very heated and disagreeable talk with Sec. lasting an hour and a quarter. . . . Conversation drifted to Knight's lecture and my testimony and Sec. showed great heat in denouncing both. In p. m. Ad. Dewey took me to drive and I poured my sad tale into his sympathetic ear.

Feb. 24—Meeting G. B. War Plans. N. Y. *World* has sensational suggestion for sham attack on N. Y. by Atlantic Fleet, using all the ships in the Atlantic—125 in all!! To attempt this would be to expose our unpreparedness, especially in personnel. Talk with Asst. Sec. in p. m. about what we could—and would have to do—in *Dept.* to get ready for war. Sec. seems *very* sure nothing is needed and that everything is ready!!!

Feb. 25. Senate agreed to "Ch. Nav. Op." in the emasculated form passed by the Senate Committee.

Feb. 26. Sent description of my horizometer, with underlying scientific explanation, to Geo. N. Saegmuller, Vice Prest. of Bausch & Lomb Optical Co.—in accord. with his oral suggestion two days ago—so the Company can prepare application for patent."

During the preceding three years I had been carrying on systematic experiments with my horizometer, and had succeeded in improving it greatly. The trouble I found was that the demands of modern naval gunnery increased as rapidly as my improvements did; so that by the time I got a new instrument ready for test, it was obsolete.

Mr. Saegmuller had had great experience in making fire-control instruments for the navy, and he thought that with the resources of the great Bausch & Lomb Optical Company in Rochester he could make it a practical success.

Mar. 1. The conferees of Senate and House came to an agreement. In the matter of Ch. Nav. Op. agreement was on basis proposed by Sen. Committee.

Mar. 4. Congress has adjourned at last. Big Naval Appropriation—biggest yet—all due of course to probability of war, and possibly just a little to my testimony as to our unpreparedness and the favorable comments on it by the public press.

Mar. 5. Meeting 1st and 2nd Committee G. Bd. in my office to discuss war game. We conclude best to refer matter to G. B. for final recommendation—Sec. agrees informally. I told Dewey my idea and he agreed with much pleasure. I told this to Sec. and he agreed with pleasure too!

Mar. 6. . . . Callan O'Lachlan called and said he was going to try to induce Sec. to make me Ch. Nav. Op. He called me up by 'phone at 7 P. M. and said Sec. was very non-committal.

Mar. 7. Sunday. I met Sec. by appointment in his office at 10:30. . . . Then the conversation drifted to our fleet, war college, Dept—especially their mutual relations. I gave Sec. an historical account of the endeavor that has been going on for 20 years to get unity of effort in Dept. and Navy; told him about Luce, Mahan, and Taylor, and the reforms Taylor began—which were ended by his death in summer 1904—and showed him that since then nearly all his work had been halted, and that 6 men had been Ch. Bu. Nav; 6 C. in C. and 6 Prest. War College;—18 men all pulling at loose ends, each man "playing his own tune," etc., etc. He seemed very much impressed indeed.

March 8. Meeting G. B. in forenoon. Discussed war game for May. G. B. not very enthusiastic about their making war game plans, Badger holding that was province of Commander in Chief. I explained that the modern and foreign method is for Gen. Staff to make war plans, and thus get a consecutive policy, instead of letting each C in C make hasty war game plans, according to his fancy. I made no impression on Badger, until I told how the Sec. and Dewey had come to my way of thinking, and then he gave in. G. B. then all agreed. Callan O'Lachlan called and said he had called on Dewey day before, and that both Dewey and his wife had spoken of me in the most enthusiastic way, but that Dewey said he was sure Sec. had made up his mind. O'Lachlan had intended to get views of rear admirals in town, but Dewey's attitude induced him to give up idea.

March 9. Meeting G. B. . . . Dewey told me he thought Sec. had made up his mind to make Fletcher Ch. Nav. Op. and Winslow C in C, etc., etc.

Mar. 10. Meeting G. B. Badger absent. Discussed war game with fleet in May next. I had considerable trouble in getting Bd. to agree to my scheme of making the game show what would really happen if a hostile fleet should start for our eastern coast. In fact, I had to surrender part of my scheme, and consent to the idea that the hostile force should be much less than what Germany would really send, the Bd. holding that, if the hostile force supposed in the war game should be so large, it would not be a game at all, but a one sided slaughter.

My entries for the next few days concern the projected war game in May and the threatening situation in regard to Mexico and Germany. Realizing that I should not probably stay in the department much longer, as I knew the secretary would probably soon decide as to the chief of naval operations, I was intensely anxious to have this war game settled before I left. It was an absolutely new departure for our Navy Department to make plans for strategic games for the fleet, and I was afraid that the scheme might fall through unless I got all the details settled before I left.

My entries of March 15 and 16 show that the Assistant

Secretary and I, together with the General Board, decided on a certain scheme for the war game in May which would represent facts as they would probably be in case of an attack on our coast.

March 17—Sec. said he does not want to have any war game in May, which will include any defeat of the U. S. Fleet! So all our plans to make the game educational to the people have failed—or will fail! Sec. made a speech at launching of *Penna.* yesterday, in which he declared that U. S. Navy had never been so efficient as it is now.

During all the time that I had been aid for operations I had been endeavoring to bring about a procedure whereby each bureau should make quarterly reports to the Navy Department as to its exact state of preparedness for war, including what had been done and what remained to be done. This idea was not original with me, for I had inherited that idea from my predecessor, Admiral Vreeland, who had inherited it from Admiral Wainwright. As there was considerable labor involved in the work, and as the matter was not very urgent, Wainwright and Vreeland had never finished the scheme, or secured the signature of the Secretary to it. But shortly after I became aid for operations the possibility of war with Japan brought the necessity for such a scheme sharply to my attention. During all the two years that had elapsed since then I had kept the war plan committee of the General Board at work on the details of the plan, so that they kept it up to date, and I had urged the Secretary several times to sign it and let me get the procedure into operation. I explained to him that *until the administrative section of the general war plan, which we usually called the "administrative plan" had been approved and signed by him, the Navy Department could not to be regarded as an efficient organization; and that if war broke out, we should be caught absolutely unprepared, that we could not even begin to prepare until after that paper had been signed.* On each occasion, also, I

told him that I thought there was great probability of our getting into the present war.

Mar. 18. I took to Sec. and explained to him carefully the new Administrative Section of the General War Plan, prepared by G. B. with accompanying letter, signed by Adm. Dewey. He demurred a good deal in a general way, and finally declared he did not wish to take any action in the matter for the present!! I then discussed with him two papers, prepared by myself, one called "Meditations on Organization" and the other "Meditations on Mobilization." He made little comment, but simply returned them to me.

Mar. 24. Mr. Lansing agrees with me absolutely as to the *Prince Eitel Frederick*. I am much relieved. It is very curious how we always agree.

Ever since my testimony of December 17, 1914, my position had become increasingly difficult. The General Board and the officers of the navy backed me in all I was doing, but the assistance they gave was purely moral and spiritual. I mean that they could not make any representations to the Secretary or bring any influence to bear upon him. There were three aids at the time; but as the aid for education did not really count, there were only two real aids, the aid for material and I, and I was told by many people that the aid for material was not aiding me, but actually working against me. The chief of the Bureau of Navigation was evidently much more in the Secretary's confidence than I was. I had thought it possible that the Secretary might make me the chief of naval operations, though I would have been willing at any time to bet ten to one that he would not. I knew that I was very deficient in naval strategy; but I also knew that I came nearer to being efficient in it than anybody else, with the exception of Admiral Dewey and Admiral Wainwright, who were both of course unavailable for the office. I realized also the grim humor of the fact that even my partial understanding of naval strategy was the main cause of my difficulties.

About this time it occurred to me that when I gave up my position it might be a good plan for me to take up either the development of aëronautics or the development of my old scheme of an experimental department, which I had suggested in my essay "The Naval Profession" in 1907, and in my essay "Naval Power" in 1911. On one occasion at target-practice, when I had command of the third division in the fleet, I had talked about this plan to Mr. Miller Reese Hutchinson, who was Edison's right-hand man, and had got him to promise to endeavor to secure Mr. Edison's coöperation in case I should ever get the plan established. On the occasion of the birthday lunch-party given to Mr. Edison in New York when I had the first division, I broached the subject to him and tried to induce him to go on board the *Florida*. He demurred to this, but we made a half-way arrangement that I should go down to Orange and talk with him about my scheme. Captain Knapp and I entertained his daughter at lunch on two occasions aboard the *Florida* and enlisted her coöperation also. On many occasions I had told the Secretary of the difficulties that inventors had with the department, and had easily got him to agree that it would be highly desirable to have such a plan adopted as I had outlined. My idea was to have a board of which naval officers and civilians should be members, who should be selected for their peculiar qualifications, the head of it to be a naval officer, in order that the efforts of the civilian inventors might be directed along lines that would be strategically advantageous, and fit in with naval necessities.

March 24. . . . I suggested to Sec. that I be given job of handling new inventions of all kinds, suggested to navy—telling him this idea was old with me, and that many people for 15 or 20 years had said navy ought to give me exclusive duty as inventor to Department. Sec. seemed much impressed, and said to speak again to him about it.

March 25th. I reminded Sec. of our talk yesterday, told him I was in earnest, and that I did not like my present job, etc.

Sec. answered he had been thinking about it, and thought it would be well to make me head of a board, go to Europe for a few months, etc. I mentioned to wife and daughter. Former is enthusiastic, and wants to go to Europe with me.

Mar. 31. I saw letter from U.S.S. *Wyoming*, approved by C in C of fleet, saying tests of my Horizometer, made under various kinds of weather and conditions, show more consistent results than the range finders show, and asking permission to keep the Horizometer until after target-practice in May.

The conditions under which I was living were becoming daily more irritating. I realized that a crisis was going to come soon, but I was continually urged by officers, including Admiral Dewey, to hang on as long as I could stand it. The break came on April 1; but, as often happens, the final straw was a trivial matter.

April 1st. Found three things were being done by Dept. in work of Division of Operations, without my knowledge. So, I went into Sec's room in p. m. and asked him to accept my resignation as Aid for Operations, saying Sec. had treated me with great injustice for three months, that I had served him faithfully for more than two years, that in every single case in which he had followed my advice, the event had proved me right, etc., etc. He asked me when my resignation would take effect, and I replied as soon as convenient to him. He replied that he would arrange it! I told Cronan and Knapp confidentially.

April 2nd. Sec. Nav. as suave and polite this A. M. as usual. I showed him my "record" as rear admiral, that is my "reports of fitness" from President Gen. Bd, Commander in Chief Atlantic fleet, also the report on me for "Eminent and Conspicuous Conduct in Battle" at Manila Bay; he seemed considerably impressed by the excellence of my reports. Confirmed my resignation in writing, giving no reason.

In the latter part of the afternoon I received information that the secretary had given out a notice to the *Herald* to the effect that he was considering the idea of appointing Admiral Winslow as chief of naval operations. As I had given in my resignation to him confi-

dentially, I was surprised that the Secretary should give out this statement without my knowledge. I realized immediately that I had to act at once or be put in a very mortifying position. As it was about ten minutes before the close of office hours, and the clerks were about to go home, I had just time in which to write a very brief letter. This was unfortunate; because with a little more time I should have been able to set forth my reasons and to make them a matter of record in the department. A statement of these reasons would have been simply that I had not been able to induce the Secretary to take the necessary steps to prepare the navy for war, and that my efforts had ended in my being ignored in even minor matters. Only two weeks before I had again taken the administrative plan to him, and he had again declined to sign it, though I had explained again that preparedness could not begin until he had approved and signed it.

As I was no longer bound to secrecy, I told a few friends that I had resigned. They all expressed great regret, but said that they were surprised that I had held on for so long a time as I had, and that my act would be recognized as one of self-sacrifice, and do great good to the navy.

The news quickly spread, and I received many telephone messages from friends and from newspapers about dinner time. So Mrs. Fiske and I went to the theater; but I found three reporters waiting for me when we reached home. I told them I had nothing to say. Some officers have told me since that this was a mistake, and that I should have declared the reason, because this would have caused an investigation.

For about five days the leading newspapers in the country contained articles, editorials, and cartoons relating to my resignation. They all seemed to take my side, but not to treat the matter as one of importance except as a sensation news, in the same class with a divorce scandal or railway accident. If an officer in any other army or navy who occupied an analogous position

had resigned that position in similar circumstances, the country would have demanded an investigation instantly and that either the officer or his chief be punished. In Great Britain even a rumored disagreement between the First Lord of the Admiralty and the First Sea Lord creates alarm throughout the empire, because a disagreement on an important point would be a national peril. But in the United States the matter was treated lightly. I had testified only three months and a half before that the navy was unprepared and that it would take it at least five years to get prepared, and in so doing I had taken an attitude directly the reverse of that taken by the Secretary of the Navy. The newspapers all stated that I resigned because the Secretary would not institute the measures which I urged; and yet, when I resigned, the matter was a seven days' wonder and then forgotten, though the question involved the safety of the nation. The Secretary directed me to continue my duties for the present.

To return to my diary.

Apr. 16. . . . I took to Sec. the Administrative Section of the Gen. Bd's War Plan and pointed out that until he approved it, the Dept. had no war plan; because although General Board had plans, they all depended on the Department and the bureaus being ready, and they could not even begin to get ready until he approved the G. B.'s Ad. Plan, whereby the Bureaus and offices reported to Dept. every quarter their exact state of readiness.—I fully expected that—after our talk yesterday,—he would sign the G. B.'s paper at once! To my amazement, he said he would talk to me about it next week! The same thing occurred about 3 or 4 weeks ago. The recommending letter was signed by Dewey Mar. 13, 1915—and is similar to letter *2 years ago*, that also was not acted on!

Apr. 19. Fletcher and Winslow at Dept. *N. Y. Times* says Winslow is to be appointed Ch. Nav. Op. Both had long conference with Sec. I do not know what Winslow said; but Fletcher tells me that he (Fletcher) urged Sec. in most emphatic language to appoint me, for reasons both professional and political. *Providence Journal* Apr. 14, contained letter

from fleet, Hampton Roads, signed "David Barry" who has two sons in fleet—saying all the officers and men of the fleet want Fiske Ch. Nav. Op. Roosevelt and I agree that opinion of all is that Fiske ought to be Ch. Nav. Op. with Howard next choice.

Apr. 23. I gave Sec. for signature the various orders for carrying out the War Game next month, and explained that he was starting a "strategical policy," and that his action was the most important, radical, and progressive action he had taken in all his two years of office. He seemed impressed, and asked me to prepare a "press notice," expounding my idea. I did so and made the statement for the press very emphatic. He gave out the press notice, just as I wrote it. I think this marks an epoch and is one of the most important things I have ever accomplished. It has taken me nearly two years to bring it to pass.

Apr. 24. *N. Y. Herald* has first column and a half on first page devoted to "General Board will Make Plans for Fleet Drills," and has long and appreciative account of the new policy. I had long talk with Dewey, and he said he thought Sec. was "coming round," that he had told Fletcher to tell Sec. he ought to make me Ch. Nav. Op. and that he thought Sec. would do it. . . . Got Sec. to order that the May War Game would be called "Department Strategic Problem No. 1."

Apr. 28. The Sec. informed me this afternoon that Captain Benson, Commandant of Phil. Navy Yard is to be Ch. Nav. Op. He gave out this news to the press this afternoon. Adm. Knight and Capt. Roy Smith both expressed to me their surprise and disapproval of Sec's selection. I do not think the Navy will like it. Fletcher told me the other day that Sec. had asked him about Benson, and Fletcher strongly urged that Benson had not the necessary knowledge or experience or ability, and was in exactly the position *now* he is fitted for.

I was surprised at the secretary's selection of Captain Benson. I had been perfectly sure that he would not appoint me, but I thought he would appoint some officer who had shown a bent toward strategy. I liked Captain Benson very well and admired him in many ways. He and I had been shipmates on board the *Tennessee* for about a year, when we had occupied the mutu-

ally difficult positions of captain of the ship and chief of staff to the commander-in-chief. Benson was a handsome, dignified gentleman of thoroughly correct habits, very religious and conscientious, and an excellent seaman; but I had never heard that he had ever shown the slightest interest in strategy or been on the General Board, *or even taken the summer course at the war college*. When I was in command of the first division, Benson was in command of the *Utah*, and I wrote on his efficiency report every six months that he would make an excellent superintendent of the Naval Academy. I knew that Benson desired to have that detail at the end of his cruise, and I thought he would be admirably fitted for it. He had been on duty at the Naval Academy for several tours, so that he was fitted for the position of superintendent not only by his ability in matters of detail, but by long experience at the Naval Academy itself. But the position for which he was now selected was the most important one in the navy, with requirements so great that no officer in the navy was really competent to discharge them skilfully. For the position the first requirement was a clear apprehension of strategy and a fine mind. Benson, so far as I knew, had devoted no attention whatever to strategy, and his mind, while good and sound, was such that he had never been reckoned one of the "bright men" of the navy. It seemed strange to me that Benson should have been selected when there were men like Howard, Knight, Knapp, Hood, and Oliver available.

May 10. Getting my office ready to turn over to Benson. Corrected and signed final copy of letter to Sec. recommending that, in carrying out the War Game the latter half of this month, the Dept. be put also into the game, go on a war footing temporarily, G. B. keep track of game night and day, and bureaus issue orders, etc., etc. Sec. was in Philadelphia, so I did not hand it to him.

May 11. Benson came in and I turned over to him about 11 a. m. About 10.30 Sec. sent for Benson and said he wished

him to attend meeting G. B. that morning. Capt. Volney Chase reported as Asst. to Chief Nav. Op! I never had an asst! I handed Sec. my letter of yesterday, and said goodbye in presence of Congressman Fitzgerald. I said, "I wish to say that I have never been treated with more courtesy by anybody than by you, and that, from my point of view, our differences have been wholly professional." Sec. seemed considerably flabbergasted, and stammered out that he entertained a high regard for me. Then I shook hands with Mr. Fitzgerald and him and departed.

I think that the six weeks which intervened between the day of my resignation and the day when Benson relieved me was the happiest period of my life. Throughout the two years previous to my resignation the situation had been most unpleasant. I liked the secretary personally, but I always looked forward with annoyance to reaching my office, and having to keep up day after day my continuous insistence on the recognition of elementary principles. It was very wearing to retain that respectful speech and manner toward the Secretary which was becoming in an officer of the navy, and at the same time never to yield. The temptation to yield was very great sometimes; in fact, it often occurred to me that perhaps I was doing wrong, and that it was my duty to do as the Secretary wished.

I had to carry on this fight alone, although the officers of the navy as a class supported me. I think that the strongest support that I got was that given by my memory of the socialist, Camille Pelletan, who had been minister of marine of the French Navy, and who in four years did it such damage that somebody remarked that if the French Government had given Pelletan a salary of a million dollars a year, and had kept him away from the navy, the Government would have made \$100,000,000 by the operation.

I do not know whether Camille Pelletan was sincere or not. I have heard from many sources that he was a very amiable man, and that he was very popular with many people in France. The people liked his "democratic

manner'' and sympathized with his attitude in trying to democratize the French Navy; but I doubt if even the people who liked him most would have liked him at all if they had realized that he was ruining the navy, which was the left arm of the defense of the republic, and which they were taxed heavily to maintain. Instead of being a friend of the people, as so many French people thought, *Camille Pelletan by his course was more dangerous to them than all the German spies in France put together. Camille Pelletan's course did more to break down the defense of the French Republic than a half a million German troops could have done.*

It seemed to me that I was in a position in which it might be possible for me to permit as great an injury to the United States Navy as the French Navy had suffered. Possibly I overestimated the importance of my position; but as I often told Mr. Daniels, I was the only man to impress him with the military side of the navy question, whereas there were ninety million people to impress him with its other sides; and it seemed to me that his attitude toward the navy, especially in the earlier days of his administration, threatened the very foundations of the national defense. Principles which I had been taught at the Naval Academy, and the truth of which I had seen proved in all my later experience and in all my reading of history and strategy, seemed to be held of little or no account.

As I walked out of the shady corridors of the Department Building into the bright sunshine of the town, I said to myself that I thought I had been able to prevent any very great lowering of the efficiency of the navy, and that I had had the great privilege of being able to do five things which would be of permanent benefit to it. These were:

1. Establishing the Division of Aëronautics.
2. Instituting strategic war problems for the fleet.
3. Proving that the country trusts army and navy officers more than it trusts any one else.

4. Making Congress realize the needs of the navy more clearly than it had ever done before.

5. Establishing the office of chief of naval operations.

Besides these, there were three other undertakings which I had not yet brought to a successful issue, but which I felt sure were in such a state that it was only a matter of a short time before they, also, would be accomplished facts. These were:

1. The establishment of some agency under the department for recognizing and developing new inventions. This was accomplished in the following summer by the establishment of the Naval Consulting Board, with Mr. Edison at the head. This differed from my plan mainly in being composed of civilians exclusively. My idea has been to have a naval officer with inventive ability to be the head, in order to steer the efforts of the civilians along the most advantageous lines.

2. The recognition of the possibilities of the diving-shell.

3. The putting into effect of the administrative section of the general war plan. Much more than any other one thing, the refusal of the secretary to sign this plan was the cause of the differences between him and me. Let any one imagine himself in my position, and realize how I must have felt in knowing that the department possessed no means of knowing its degree of readiness for war, and that it could not know it until a certain paper had been signed, and until the methods which that paper provided for had been in operation for a considerable time.

The administrative plan was signed shortly after I gave up my position to my successor. *That plan and the office of chief of naval operations are the means by which the Navy Department got ready for war, and by means of which it operated during the war and has operated since.*

The virtues of these two schemes were realized immediately after they were put into operation. This is

proved by the following extracts, taken from page seven of the official report of the Secretary, made in the following December, 1915:

OPERATIONS

BETTER ORGANIZATION EFFECTED

Upon my recommendation the naval appropriation act of 1914 provided that "there shall be a Chief of Naval Operations . . . who shall, under the direction of the Secretary of the Navy, be charged with the operations of the fleet and with the preparation and readiness of plans for its use in war." . . . A well thought-out plan, prepared by the General Board, for the preparation of the fleet for war in the Atlantic, has been approved and each office and bureau under the department has been assigned its proper share in the general scheme of preparedness. By reference to periodic reports the department may at any time become informed of defects, of efforts made to overcome them, and of the progress made toward a complete state of readiness.

It was mainly (almost wholly) because I urged the two measures which the Secretary describes and praises that I had to resign my position as aid for operations.

I was surprised that the Secretary should state that the provision for a chief of naval operations was made upon his recommendation.

CHAPTER XXXVIII

"THE MASTERY OF THE WORLD," NAVAL PREPAREDNESS AND MY REPRIMAND

I REMAINED in Washington until the end of June, carrying out tests of the Isham diving-shell. The only instance of particular interest to myself was a speech that I made at the annual dinner of the Naval Academy Graduates' Association on June 4 in reply to the toast, "The Navy."

This speech made a great impression on my memory from the curious fact that it was given before a large group of naval officers in the presence of the Secretary, and yet expressed ideas of which I knew he disapproved. I have heard since that some criticized my speech as being in very bad taste at a social dinner when the Secretary was a guest; but the great body of naval officers approved it very highly. The speech was telegraphed entire all over the country by the Associated Press, and it appeared more or less fully in all the papers the next morning. On the following day there were many editorials. All those that I saw were exceedingly favorable.

One phase of this speech has a curious psychological interest to me, and that is, although I have always been an intensely nervous man, and though I knew my speech might subject me to severe punishment, yet I felt not the slightest nervousness about it. The human animal is a curious thing.

On June 28, I received orders to obey my previous orders and go to the war college. I did not want to go to the war college at all. One reason was that I had engaged an apartment at Stoneleigh Court, in Washington,

until October, and another reason was that I would be virtually in “cold storage,” as some of my friends expressed it. But my principal reason was that my wife’s health seemed to have been failing within the last year, and I was beginning to be very uneasy about her.

July 1. Reported at War College. Received many letters of congratulation on my speech and my general “stand,” that had been long awaiting me.

July 5. N. Y. *Sun* states Lord John Fisher, R.N., former 1st Sea Lord is made Prest. of a Board to consider inventions for naval use! Sec. Nav. has lost another opportunity to make a ten strike by establishing the Board of Invention and Development, that I proposed to him.

July 6, 7, 8, 9. Getting into touch with War College, attending lectures, etc. Working up scheme for bomb adapted to be dropped from air craft on vessels & to explode if it strikes, & also if it misses after sinking—say 10 feet—by action of hydrostatic piston, or contact.

This was, of course, a design of what has since been called the “depth bomb.” I worked out a good detailed design, but I never really had the bomb made, as my attention became attracted to other matters. I have been told that I have been credited by some with the invention of the depth-bomb. This is a mistake.

July 12. . . . Received Naval Institute’s announcement of election for officers next October 10, in which I am the only candidate for Prest! And the announcement states that “Adms. Fletcher & Knight & Captain H. S. Knapp were all asked to stand for election; but each one declined to run against Rear Admiral Fiske.”

July 13. Sec. Nav. has decided to establish the “Board of Invention and Development.” Edison and others have agreed to serve as advisers, & the papers comment on the idea most favorably. This is the pet scheme I have had for years, & which Sec. Nav. agreed some time ago to make me chief of. But I do not suppose he will give it to me now. Some papers say that Fiske, Strauss & Taylor are mentioned for the position.

July 14. Adm. Knight told me this morning that, in his

opinion, I have not the slightest chance of getting made Chief Board Inv. & Development, because Sec. Nav. feels "very vindictively indeed" toward me. Sorry, but I can't help it. . . . Canal (Panama) has another slide, so I was right about folly of sending fleet through—while war is possible for us in the Atlantic.

July 16. Sec. getting much praise for Invention idea. . . .

July 17. Board of officers in Wyoming send in report on Horizometer that is favorable in main, but points out certain limitations & makes certain recommendations for changes.

I had no duties at the war college. Knight naturally did not want me on the staff, realizing the incongruity of the situation that would be created if I were. He gave me a desk in the delightful library of the war college, from the windows of which I could see in three directions most beautiful and inspiring views of Narragansett Bay and its green-covered shores and islands. The library is an excellent one, and is especially complete in books that have been written on history, government, and the naval and military arts. Toward the latter part of my stay in Washington I had said to myself that perhaps I was theoretically wrong in the attitude I had taken, that possibly I was a "militarist," and that possibly it might be true that nations would soon abandon war, and therefore would soon abandon armaments and navies, or at least restrict them by mutual agreement.

So immediately on getting established in that delightful library I set to work to study up the subject with as open a mind as I could command. I have always felt more at home in a library than in any other place. Men of my name have been identified with books for many generations, and my earliest recollections are of lying on the floor in my father's library reading books.

My recollection of the main points in history was fairly good, and history, of course, told me that wars had continually succeeded one another all through history; that the most important things that had happened had been wars, and that the most important results

that had been brought about had been brought about by wars. But there were many people—one of whom was ex-President Taft—who, while not pacifists at all, held the idea that it was possible to form a league of nations to enforce peace, and that the nations of the league could be relied on to enforce it, and to remain at peace not only for forty-three years, as Germany had done, but for periods indefinitely long. It seemed to me that this was largely a matter of psychology, and so I spent a month studying psychology. Of course I could not get a very profound knowledge of psychology in a month, but my good grounding in mathematics and the physical sciences, and my long training as an experimentalist, enabled me to get a pretty good grip on the elementary principles in that period.

It seemed to me, after getting that grip, that psychology gave no ground whatever for supposing that large groups of human beings now were any different from what they always had been, or that they would act differently from the ways in which they had acted in the past, under similar conditions. In fact, it seemed to me that psychology proved absolutely the reverse.

The result was that I wrote an article and gave it the name, “The Mastery of the World,” because the conclusion I came to was that all history and psychology and the physical sciences agreed that, instead of there being less chance for war in the future, there was more chance, and that the probabilities were that some “monster of efficiency” would some day get control of the world, as Rome did nineteen centuries ago, and enforce peace in the same way that a strong municipal government enforces peace in a city.

This article appeared in *The North American Review*, in October, 1915. I followed it in November by an article called “Naval Principles,” in December by an article called “Naval Preparedness,” in January by an article called “Naval Policy,” and in February by an article called “Naval Defense.” All these articles at-

tracted a great deal of attention from the newspapers, more than nine tenths of which was favorable. The last three articles were written under considerable mental excitement, because I had become more and more convinced that we were going to get into the war, and more and more alarmed at our incredible delay. The articles were all devoted to showing the impossibility of preparing for a modern war except by following plans which had been carefully laid out in advance, because of the confusion that had always been inseparable from making preparations in a hurry. This was very easy to do, because it was merely necessary to point out the confusion in the first part of our Civil War and Spanish War.

My article on "Naval Policy" ended, "Shall the United States take action now or wait until it is too late? Is it already too late?"

Sunday. Oct. 17. . . . On Oct. 16, I was re-elected President Naval Institute (5th time) this time unanimously.

Oct. 21. *Popular Science Monthly* has two pages by Rear Admiral Fiske, being a quotation from my 1911 essay in Naval Institute called "Naval Power," besides a full-page picture showing a battleship on wheels knocking down buildings in N. Y. The article is called "If Battleships ran on Land."

The article in *Popular Science Monthly*, illustrated as it was by a very exciting and realistic picture, attracted a great deal of attention. It was copied in some English papers the following month. During the following year the British "tanks," or "land battleships," appeared.

Nov. 19. Joined Aero Club of America, a highly patriotic, farseeing and beneficent organization.

Dec. 25. . . . I had a most unpleasant interview with Secretary yesterday.

My interview with the Secretary was due to my calling on him with reference to a letter which I had re-

ceived from him in answer to an application for leave from me. It had been the custom in the navy for many years to grant an officer one month's leave per year if he could be spared, and in case leave is not taken, to let the leave accumulate up to three months. I had not had any leave for more than ten years, and so my application was perfectly proper, especially as I was going to retire in less than six months, and was not doing any duty of any kind. In my application I had spoken of my wife's delicate health, and of the fact that as Newport was so cold, I would rather spend it with her farther South. The Secretary's answer to my application granted me three months' leave on the understanding that I was to take my wife South! During my call I explained to him that my wife did not want to go farther South than Washington, and that I had not had any leave for over ten years. The Secretary finally said I might have leave for a month. As I turned to go, he said to me that his attention had been called to an article written by me in *The North American Review* on "Naval Preparedness," and that if I had not been an admiral, he would have me court-martialed. I expressed surprise, and said that he himself had approved the article, and not only that, but two others. He replied that he thought they were to be published in the *Naval Institute*. I replied that I had not intended to publish them in the *Naval Institute*, and had not written or said anything to give that impression. I added that there was nothing in any of the articles that was not perfectly well known to naval officers and army officers, and that I was simply trying to make things clear to the people. He answered if the people wanted to know about the navy, they should go to the head of the navy for their information. I answered that I could not see where I had done wrong, and that certainly I was not opposing any plans for improving the navy that he might have, or the President. The Secretary cut short the interview here by saying, "You cannot

write or talk any more; you can't even say that two and two make four."

This put me in a very embarrassing position, as I had already agreed to write articles for *Collier's* and *The North American Review*, and had accepted an invitation from the Commercial Club of Chicago to go out to Chicago and explain the present status of the navy. Of course I had explained to these organizations that I would have to get the approval of the secretary for whatever I should write or say; but here was a flat order not to say or write anything.

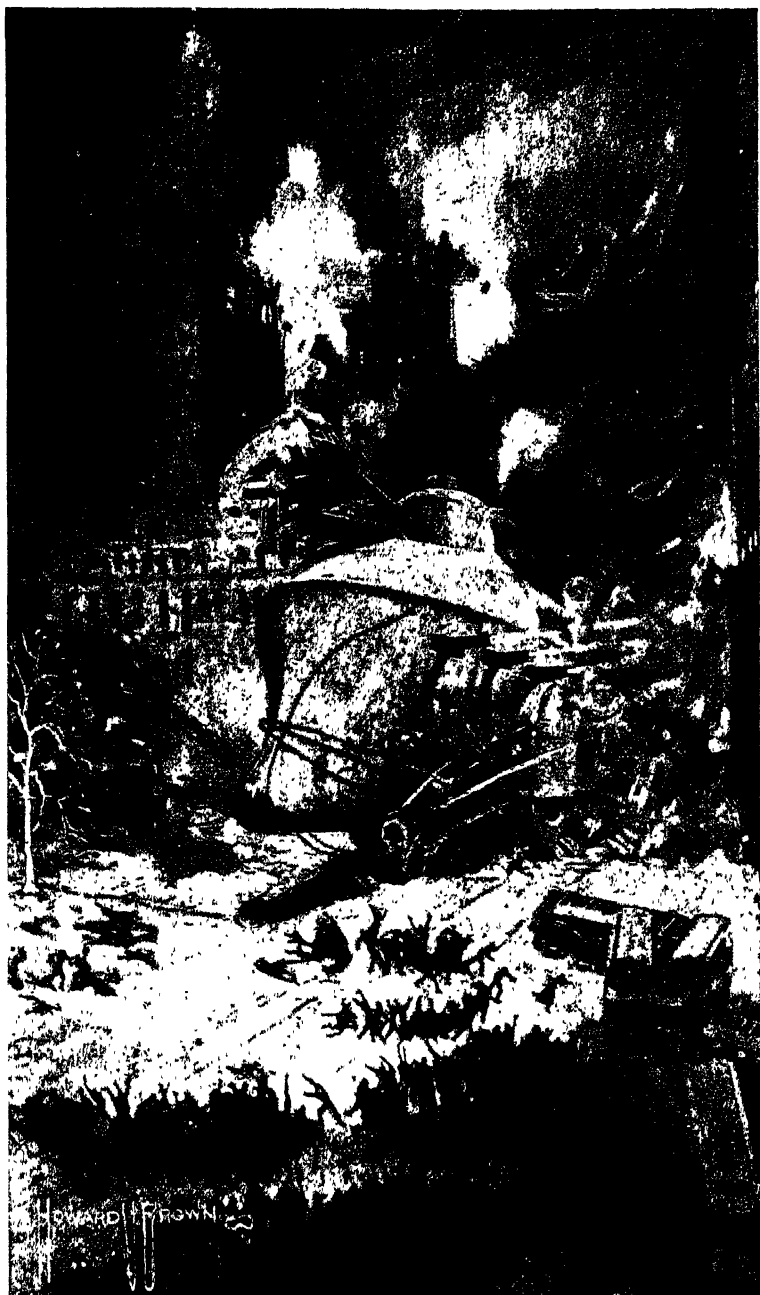
Jan. 1.—1916. Saturday. I wrote full explanations to *North Am. Review* and *Collier's* that I would have to fail to fulfill my engagement to write articles; and I also wrote same to Commercial Club of Chicago, that had asked me to give address on facts on Jan. 15. I hear from them each that a fuss is going to be made. Comm. Club telegraphed expostulating to Prest; but he was away, and his Sec. referred matter to Sec. Nav. who up to Dec. 31st had not answered Club. N. Y. *Sun* asked me to write 300 words on naval matters for issue Jan. 1; and Marine League of U. S. A. asked me to make after dinner speech in Boston, some Tuesday ev. Chicago *Tribune* of Dec. 31 published interview with Sec. of Commercial Club about my being ordered not to make the speech—in which both Sec. of the Club and the paper commented adversely.

Jan. 5 Sec. Nav. gave out yesterday fact of my being refused permission to speak before Chicago Commercial Club—and said all navy officers must merely back up civilian policy and not try to influence legislation.

Jan. 6. Washington *Post* has fine editorial on "operating the Navy"—its text being my testimony last year. It urges Congress to act on it.

Jan. 8. Most of the papers this morning have account of attack made by Repr. Fred A. Britten in House Naval Committee on Sec.'s muzzling Knight and me, and transferring Sterling and me . . . officers who testified honestly before the Naval Committee, away from Washington.

Jan. 11. *Collier's* of Jan. 15 that came out yesterday has editorial called "The Muzzle of Josephus" that condemns



Courtesy of Popular Science Monthly.

LAND BATTLESHIP

roundly his course towards me. *Chicago Tribune* of Jan. 6 has long letter from its Wash. correspondent headed, "Country Denied Defense Facts," and it has on Jan. 9 an editorial headed, "Censoring Vital Knowledge"—both of which abuse Sec. Nav. roundly for muzzling me.

Jan. 12. Sec. Daniels yesterday denied the statements in *Collier's*, and said he did not know I had written any articles for *Collier's*, and that he had said I might have the article in *N. Am. Review* published if he had already approved, etc. Also he gave out yesterday p. m. that he has given me 1 mo. leave with no restrictions. He did not say he had granted me 3 mo. on condition that I go south and had withdrawn it when I said I did not want to go south.

Jan. 16. Sunday. Visit from F. P. Dunne (Mr. Dooley) of *Collier's* on Thursday & Friday. Visit from Henry Reuterdahl the marine artist on Friday and luncheon with us Saturday. Arranging with Dunne to get Sec. to let me proceed with articles. . . . Two letters from Theodore Roosevelt, written on Jan. 11—one typewritten—the other with his own hand—highly commending my articles that came out in *North American Review* & asking me to luncheon at Sagamore Hill on Feb. 3. I accepted.

The articles which *Collier's* asked me to write were to be merely descriptive of the navy, for the purpose of interesting the public, and were to be referred to the Secretary for his approval before being published. We did not get permission to publish them.

Jan. 18. . . . told me this p. m. that Sec. had finally signed the "Administrative Plan," that I tried for two years to get him to sign, on May 18 last—7 days after I had resigned!!!!

CHAPTER XXXIX

MY SECOND TESTIMONY AND THE SECRETARY'S ATTACK ON ME

MY diary says:

Feb. 8. Chief of Bureau Navigation, testified before House Naval Committee that fleet was fully manned, etc. Representative Britten cross questioned him sharply about this & made him admit he has not been to sea for 5 years & had never served in a modern battleship. When questioned as to what Adm. Fiske meant when he testified Dec. 17, 1914, that it would take 5 years to get navy ready, he answered that perhaps he meant it would take *him* 5 years to do it. When asked what the navy thought of Fiske's qualifications, he answered that he was considered a very good inventor! *Life* has as outside picture—a map of U. S. called "New Prussia," with German names to the towns, etc.

Feb. 11. Sec. Garrison has resigned! . . .

Feb. 20. . . . Rec'd letter yesterday from Comdr. J. P. Morton, comdg U. S. S. *Scorpion* at Constantinople saying that a British officer, belonging to the British fleet in the Ægean Sea had flown over the land into the Sea of Marmora in a large hydroaeroplane carrying a Whitehead torpedo, launched the torpedo at a Turkish transport and sunk it. This is my invention, patented July 16, 1912. Hurrah! I have invented a *new method of warfare*, and it is successful.

Feb. 27. Sunday. Adm. Winslow testified before Committee & so did Badger. Badger was ultra-conservative & complimented Sec. for being first to publish report of G. B., etc. Winslow was very frank in backing me up, declaring for necessity of Gen. Staff, etc.

Mar. 5. Sunday. Navy League has asked me to make the speech on a Navy General Staff at convention about Apr. 10 in Washington. I do not think Sec. will permit me to do it. A. &

N. Journal says Adm. Benson says that plans made by office of Naval Operations will in a short time accomplish all that by human foresight it is possible to do by any system that could be designed, etc.

March 13. The Secretary has finally given permission for me to publish Naval Strategy in the *Naval Institute*, but he has stricken out the last 5 pages, which were the conclusions to which the reasoning led!!

Mar. 17. The *Naval Institute* accepted my article "Naval Strategy" the same day they received it & sent it to the printer with orders to print it at once, so as to publish it in the next Proceedings, the March-April number.

Mar. 25. Appeared before House Naval Committee yesterday. Hearing lasted from 10.30 a. m. till close of hours (4.30) with intermission for lunch. Papers last night & this morning gave considerable space, but do not state the matter correctly. They exaggerate what I said about the necessity for military control of the navy & emphasize unduly the personal relations between the Secretary and me. . . . I described how I had brought about the office of Ch. Nav. Op. & that Sec. had induced Gen. Bd. to strike out recommendation for 19,600 men.

Mar. 27. Spent forenoon before House Naval Committee. The parts of my testimony that have attracted attention are that German navy is twice as effective as ours, that our present system causes loss of 25% in efficiency or money—the two being the same in the end—and that I resigned because I differed with Sec. Nav. as to preparedness.

My testimony before the House Naval Committee on March 24 and March 26 brought out some interesting situations. Shortly after the Congress passed the Naval Appropriation Bill on March 4 of the previous year, 1915, which contained the provision for a chief of naval operations, but with certain important parts left out, I was informed by an influential member of the committee that there were a number of men on the committee who were in favor of a general staff, and that they would insist upon my being called before the committee in 1916. For this reason I had been preparing myself for the ordeal for more than a year. I knew that there were a

number of the committee who would oppose my being called, and I was told that the secretary opposed it strongly. I was told shortly before I was finally called that the men on the committee who wished me to be called finally brought it about by accusing the other members of the committee of being afraid of having me called, because I would tell some unpleasant truths.

During the two days when I was testifying I noticed a great deal of difference between the attitude of the members on this occasion and on the occasion when I had testified before, December 17, 1914. On the earlier occasion I had found an almost incredible ignorance on the part of nearly all the committee about vital questions *which they, and they only, were to decide*; but an almost incredible open-mindedness also. On the second occasion the members of the committee were somewhat better prepared in the matter of knowledge to discharge their highly responsible duties than they had been before, but they were not nearly so open-minded. I should not like to believe that they were influenced by politics, but it seemed to me that the Republicans approved of the ideas which I advanced and that the Democrats opposed them. I had always admired Mr. Padgett, the Chairman of the committee, and I had him at my house for dinner only a few nights before. On December 17, 1914, he had shown a perfectly open mind, but on the second occasion he seemed to be trying to "trip me up" whenever he got a chance. He did not seem to be trying to bring out the real facts as to a general staff, but to be making a covert fight against it.

The main point that I tried to bring out was the necessity for incorporating in the naval appropriation bill certain provisions relating to the detail of at least fifteen assistants in the office of naval operations that had been left out of the previous appropriation bill after having been incorporated in it by the committee. Another matter which I emphasized almost as strongly was the necessity of paying much more attention to

aéronautics. I had noticed with dismay that nearly all the work which I had done in establishing a Division of Aëronautics and in developing naval aéronautics was not being pushed.

In fact, it seemed to me that the Division of Aëronautics, which I had got established with great difficulty, was virtually abolished, and that aéronautics was in danger of being starved to death by the inaction of the department. In the Secretary's annual report, dated December 1, 1915, three months before, was the passage, "Two million dollars will be needed for the next year, and has been asked for in the estimates."

For some curious reason little attention was paid to my testimony as to aéronautics, though *aéronautics was obviously our one hopeful chance*. In the record of my testimony is the passage:

Mr. Britten. The recommendation of the General Board for \$5,000,000 was cut to \$2,000,000 by the Secretary. . . . Will you tell us please, if \$5,000,000, in your opinion, is too much, and why? I will say to you, before you start to answer, that Capt. Bristol's estimate was over \$7,000,000.

Admiral Fiske. Yes, I remember that very well. His estimate was originally for \$13,000,000, was it not?

Mr. Britten. Yes.

I then described the value of aéroplanes, and said "aéronautics is the thing on which we can get to work quicker, and by which we can accomplish more than by anything else." Finally:

Mr. Britten. Admiral, you did not answer my question whether \$5,000,000 was too much or not enough?

Admiral Fiske. It is not enough.

The appropriation bill, when finally passed, allotted \$3,500,000, for aéronautics. It *also contained the replacement of most of the original features in the provision establishing the office of chief of naval operations that I had urged.*

My diary says:

Apr. 3. Sec. testified today. Roasted me in the afternoon: said I was not in harmony with Department, & that he would have asked me to resign, if I had not done so.

Apr. 4. The morning papers give considerable space to the Sec's attack on me. I held conference in forenoon & evening with Admirals Schroeder, Wainwright & Osterhaus at Schroeder's house. We agreed best thing is for me to write to Naval Committee, requesting permission to appear & refute Sec's testimony.

It had always been the custom for the Secretary of the Navy to be the first to testify before the House Committee, but on this occasion the Secretary was the last.

The following account of the Secretary's testimony is taken from the *New York Herald*, on April 4:

Just before the hearings on the naval bill came to a close before the House Committee on Naval Affairs today Josephus Daniels, Secretary of the Navy, took occasion to bring about a final airing of his personal differences with Rear Admiral Bradley A. Fiske, U. S. N., one-time Aid for Operations. Mr. Daniels, in answer to questions propounded by Representative Lemuel P. Padgett, of Tennessee, chairman of the committee, tried to impress the committee with the fact that Rear Admiral Fiske in criticising the situation in the navy and its lack of preparedness, was moved by personal grievances rather than by higher motives.

One of the causes of differences, the Secretary said, was his issuance of the order barring wine from the officers' mess. Rear Admiral Fiske, he stated, had protested against this. Then, to cap the climax, he said:

Rear Admiral Fiske told me that if the officers were deprived of their wine they could take to cocaine.

The Secretary then went on to give further details of his relations with the Rear Admiral.

RAISES ISSUE OF VERACITY

In one instance a direct issue of veracity was raised. Rear Admiral Fiske told the committee that he acted as the personal

messenger of the Secretary when he sent word that he desired the General Board to suppress its recommendations with respect to increased personnel of the navy.

Today, Mr. Daniels said:

"I never told the General Board to do anything in my life."

"The Secretary's broadside at the officer all occurred in the last few minutes of the hearing.

Mr. Daniels also contradicted in some degree the statement of Rear Admiral Fiske with regard to his failure to be appointed to the General Board. The Secretary said it was true that Admiral George Dewey had recommended the appointment of the officer to the Board, but he had afterwards changed his mind, saying he thought Rear Admiral Fiske too "theoretical" for this post and that a more practical man should be appointed to it.

The thing the Secretary wanted to emphasize most, it appeared, was his contention that the Rear Admiral's troubles with the civilian head of the department, arose long before the question of preparedness became acute; that when Rear Admiral Charles J. Badger was about to retire Rear Admiral Fiske importuned the Secretary "a dozen times" that he be made commander in chief of the Atlantic fleet; that when it was suggested that Rear Admiral Fletcher, now Admiral, might be available for the appointment of commander of the fleet, Rear Admiral Fiske stated that he would not desire the place and would refuse it if it was offered to him; whereupon, according to Mr. Daniels, the Secretary wrote and offered the place to Rear Admiral Fletcher and he was glad to accept the appointment.

Also, the Secretary explained that the real issue between himself and Rear Admiral Fiske was whether the navy should be operated under the ideals of the Old World or of America.

"He told me, not once, but five times," said the Secretary, "that if we did not follow the principle of militarism and put men at the head of the navy whose fathers and grandfathers had been naval officers, we would never attain any degree of preparedness."

Apr. 5. *N. Y. Sun & World* say editorially I must reply to Sec. *Herald* has editorial taking my side against Sec. Nav. I must defend myself. Fortunately that is easy.

604 FROM MIDSHIPMAN TO REAR-ADMIRAL

After my meeting with Schroeder, Wainwright, and Osterhaus, I prepared a letter to House Naval Committee. We had a meeting the following morning, April 5, at which I read my letter to them. They suggested a few minor changes in it, which I made. At their suggestion I handed this personally to the secretary of the House Naval Committee.

My letter read as follows:

Washington, D. C.
April 5, 1916.

To the Naval Committee,
House of Representatives,
Hon. Lemuel P. Padgett, Chairman.

Gentlemen:

Referring to my testimony given before the Naval Committee on March 24 and 26, to the testimony given on April 3 by the Honorable Secretary of the Navy and the editorials in this morning's issue of the *New York World*, *Sun* and *Herald*, I beg leave to request your attention to the fact that the testimony of the Secretary has cast a serious cloud on mine.

For this reason I respectfully request permission to appear before the committee to explain certain occurrences concerning which I fear that the Secretary's memory had led him to do me great injustice.

According to all the papers that I have seen, the Secretary said that I told him that if naval officers were deprived of their wine they would take cocaine. It is true that I tried to persuade the Secretary not to prohibit wine and beer; *spirituous liquors had been forbidden by law for fifty years*. My arguments were expressed in a closely typewritten letter to him, four pages long, dated May 27, 1914, and covered many points. It would be necessary to read this entire letter to get a correct idea of what I told the Secretary. I should like to show a copy of the letter to the committee.

I did not know that my letter caused any unpleasantness between the Secretary and me. It caused no unpleasant feeling on my part toward the Secretary, because I felt that he was acting according to his convictions.

In the matter of desiring to be commander in chief of the Atlantic fleet, I did make application for the command. Such

an application was perfectly proper, as I had served successfully in command of three divisions at different times and was then aid for operations, which many officers thought a more important position.

I wish an opportunity, however, to convince the committee that I did not tell the Secretary that Fletcher did not want the command; the Secretary's memory leads him into error there. What I did tell the Secretary was that Fletcher had told me some time before that he thought the natural thing to do when Admiral Badger gave up the command was to give it to me, make Fletcher aid for operations and then make Fletcher commander in chief when I retired, Fletcher being eighteen months younger than I and my junior in rank.

I find the following entry in my diary on the date of April 30, 1914:

"Secretary of the Navy, in accordance with my request, telegraphed Fletcher asking him if he would like to change places with me."

Fletcher was then in Mexico in command of the first division, which I had commanded a year and a half before; and Admiral Winslow, my junior, also a candidate for the position of commander in chief, was also in Mexico, in command of the special service squadron. It will be seen that at my request I was to leave Washington, give up altogether my position as aid for operations and take a much lower place—a subordinate position in the fleet in Mexico as commander of the first division. Surely this was not pressing my claims unduly, but rather the reverse.

I find an entry in my diary of May 1—

"Fletcher answered above despatch, saying that he would not like to become aid for operations, as he wished to succeed the present commander in chief."

I was greatly surprised but Fletcher has explained to me since why he changed his mind. It is needless to state that Fletcher's reasons were perfectly satisfactory to me.

I find in my diary under date of June 15, 1914,

"Secretary of the Navy told me the accounts published in the morning papers were correct; that he is going to make Fletcher commander in chief. I told him I could make no objection, that I had continually praised Fletcher as a fine admiral and that he could make no mistake in making Fletcher commander in chief."

I have never had the slightest ill feeling about this episode, and I have told every one to whom I have talked about it that if I had been in the Secretary's place I would have appointed Fletcher because he had made good in important practical work in Mexico. For many years Fletcher and I have been close friends, and we are so still.

As to my telling the Secretary, not once but many times, that "if we did not put men at the head of the navy whose fathers and grandfathers had been in the service, we would never be able to obtain any degree of preparedness," I have never entertained such ideas; my father was a clergyman, and not one of my paternal ancestors for more than four hundred years had been in the army or navy. My maternal uncle was in the navy, but he was killed at the age of eighteen; and my maternal grandfather was an army officer in his early days, but resigned and went into the lumber business.

I do not remember any other army or navy relatives, and I am not a militarist or a believer in caste. What I did tell the Secretary was that countries like Germany and Japan have aims and ideals different from ours; that in those countries every man is in a measure military, as his father and grandfather were before him, and that such nations naturally have a greater military spirit and a greater military ability than nations like ours.

Referring to that part of the Secretary's testimony that bears on my testimony that the Secretary directed the omission of a recommendation of 19,600 men from the General Board's report of December, 1914, I should like an opportunity to convince the committee of the correctness of my recollection by showing the entries made in my diary at the time.

Very respectfully,

B. A. FISKE,

Rear Admiral, United States Navy.

Apr. 6. Navy League has ordered 2500 copies of my "Naval Strategy" & asked me to read it before the convention next month, & has put my name on program to read it. Of course, I am forbidden to speak at all on Preparedness! So some one else will have to read it.

Apr. 7. N. Y. *Herald*, *Times*, *Sun*, *Tribune* & *American*—also *Wash. Post* (doubtless practically all big papers) have long

scare-head accounts of my letter to House Naval Committee, quoting it almost in full. . . . Lots of letters from friends about it.

Apr. 8. I rec'd Mr. Padgett's letter, saying Naval Committee would not call me, but I may send copy of my letter of May 27, 1914, expostulating about the Sec's wine mess order & he will print it in the hearings. So I wrote to Sec., asking for a copy of it & wrote Padgett, telling him I had done so. Lots of congratulatory letters from friends.

Apr. 11. . . . Repr. Gardner in his Navy League speech ended "Bradley Fiske, I salute you as our Arnold von Winkelreid."

Apr. 12. At meeting of Navy League this a. m., Col. Thompson, the Prest. of League read a letter from Sec. Nav declining to permit me to read my paper on "Naval Strategy" published in March-April *Naval Institute*. Col. Thompson made eloquent speech denouncing Sec's act, & was followed by W. S. Stayton on same lines, but bitter. Stayton was followed by Henry Reuterdaahl, the artist, in really an oratorical outburst—at the conclusion of which all the audience rose & cheered me! Mayor Lewis of Forest City, Ills. read my paper. When he started, Stayton asked audience to act as if he were Adm. Fiske, & they all got up and cheered again!! Very nerve-racking to me!

Apr. 13. Morning papers devote considerable space & headlines to demonstration of cheers & hisses at Navy League yesterday. Senate yesterday p. m. adopted unanimously a resolution proposed by Senator Lodge "directing" Sec. Nav. to send to Senate Gen. Board's letter of Aug. 3, 1914, urging getting navy ready & my letter to Sec. of Nov. 9, 1914,¹ reporting navy unprepared for war!! Papers mention it.

Apr. 15. Rec'd from Dept. a letter enclosing a photo copy of my letter expostulating against using the Wine Mess Order. Took it down to Naval Committee with a letter of transmittal from me, & handed it to the Sec. of the Committee.

This letter was very long, and analyzed the whole sobriety question as related to the navy. It dealt also with the letter from the surgeon-general, which seemed to me an insult to navy officers, because it represented them as

¹ See page 555.

being much less sober than the enlisted men. My letter pointed out also that whatever lapses from sobriety occurred, occurred in almost every case when on shore leave, away from the restrictions of naval life, so that the Secretary's order would not affect the real trouble. It also predicted that the issuing of the order would not decrease drunkenness. My information is that this prediction has been fulfilled. In the middle of paragraph ten was the sentence, "Another effect would be an increased temptation to use cocaine and other drugs."

Apr. 17. Called on Admiral Dewey, & he stated in the most emphatic terms that the statement to House Naval Committee made by Sec. Nav. in his recent testimony to the effect that Dewey had asked Sec. not to keep me on Gen. Bd., as he wanted a practical man and not a theoretical man was utterly in error!! Dewey also told me that he was telling this broadcast. Several officers had told me of this.

The statement of the Secretary as printed in the official report of his testimony was as follows:

"Later Admiral Dewey requested me not to put Admiral Fiske on the General Board. He said he wanted a practical man; that Fiske was too theoretical; and I did not put him on."

This statement surprised me for the reason that I had served twice on the General Board and Admiral Dewey had given me the mark 4 (the perfect mark) on every semi-annual efficiency report; and his request that I be retained on the board after being relieved as aid for operations, had been made without any suggestion from me. Furthermore he had put my name in a short list of officers whom he had mentioned for "heroic conduct" at the Battle of Manila and had taken occasion many times while I was on the board to compliment me on my abilities and conduct. So I was not surprised when I heard that Admiral Dewey was denying the statement attributed to him.

Finally, after several officers had told me that Dewey

was denying it, I went to his office to ask him face to face if he had done so. When he saw me coming in at the door he rose from his chair (in the presence of his aid, Lieut. Commander Le Breton) and advanced towards me with both hands outstretched, saying,

“Fiske, I never said it, I never said it. No communication passed between the Secretary and me about your staying on the board except when you were present, and you heard me tell the Secretary that I wanted you to stay.”

CHAPTER XL

UNPREPAREDNESS LETTER, LETTER OF PRESIDENT, AND RETIREMENT

APR. 19. . . . Telephone message from Sec's Aid said my preparedness letter cannot be found! I sent a copy, which was copied and returned.

Apr. 23. . . . All the papers (I believe) print my Unpreparedness letter practically in full. Sec. transmitted it to Senate yesterday with a letter, etc., etc., etc.

The Secretary's letter read as follows:

The Secretary of the Navy,
Washington, D. C., April 21, 1916.

To the Senate:

I am in receipt of the resolution adopted by the Senate on April 12, 1916, calling for—

(1) A communication, dated August 3, 1914, from the General Board of the Navy warning the Navy Department of the necessity of bringing the Navy to a state of preparedness.

(2) A communication, dated November 9, 1914, from Rear Admiral Bradley A. Fiske, senior adviser to the Secretary, warning the Navy Department of the unprepared state of the Navy.

Upon receipt of this resolution, diligent search was made in the files of the Department for the communications desired. That dated November 9, 1914, from Rear Admiral Fiske, is appended hereto. The chief clerk was unable to find it in his files, it having been withdrawn by an officer who "looked it up several times but could not find it." However, the copy herewith transmitted was furnished the Department by Admiral Fiske at my request.

This communication was not furnished me, and I did not know of its existence until long after it was written. I find upon inquiry that it was filed with the chief clerk, without my knowl-

edge that it had been written. Although Rear Admiral Fiske was in my office daily, he did not tell me he had placed the communication on file. His article was written after the estimates for the Navy, as required by law, had been submitted, and I was left in ignorance of its existence, while Congress was considering legislation for the increase of the Navy, and actually enacting legislation which has secured the best organization the Navy Department has enjoyed in its history. I was greatly surprised when I learned that a communication deemed important enough now to be the subject of a Senate resolution was not considered by its author of sufficient importance for him to present in person to me, instead of depositing it, without acquainting me of his action, in the files of the Navy Department.

We were unable to find any communication such as that described in the resolution, from the General Board under date of August 3, 1914, though our files contained a letter of two days previous not bearing upon the subject mentioned in your resolution. I therefore addressed the following letter to Admiral Dewey, president of the General Board:

SECRETARY'S LETTER TO DEWEY

April 17, 1916.

My dear Admiral Dewey: I am in receipt of a resolution from the Senate requesting me to send "a communication, dated August 3, 1914, from the General Board of the Navy, warning the Navy Department of the necessity of bringing the Navy to a state of preparedness.

I have made a careful examination of the files of the Navy Department and have not been able to find any such communication. If the General Board has such a communication of that date, won't you please send me a copy?

Sincerely yours,

JOSEPHUS DANIELS.

Admiral George Dewey,

President of the General Board, Washington.

In response to this inquiry, I received the following letter from Admiral Dewey:

Office of the Admiral of the Navy,
Washington, April 18, 1916.

My dear Mr. Secretary:—I am in receipt of your letter of

612 FROM MIDSHIPMAN TO REAR-ADMIRAL

the 17th inst. asking me to send you a communication from the General Board, dated August 3, 1914, "warning the Navy Department of the necessity of bringing the Navy to a state of preparedness."

There is no letter or recommendation from the General Board bearing the date of August 3, 1914. I find however, that on August 1, 1914, a special meeting was called at the request of Rear Admiral Fiske, aid for operations, to consider the withdrawal of battleships from Mexican waters to their home yards. A letter adopted at this meeting, and bearing its date, was signed by Rear Admiral Knight, senior member present, a copy of which is forwarded herewith.

You will note that this is a confidential communication, and as it bears intimately upon our policy with regard to certain foreign powers I do not think it advisable that it should be given to the public.

Sincerely yours,

GEORGE DEWEY.

HON. JOSEPHUS DANIELS,

Secretary of the Navy.

It will be noted that Admiral Dewey states the communication of August 1, 1914, "bears intimately upon our policy with regard to certain foreign powers," and that he does "not think it advisable that it should be given to the public." In view of this statement of Admiral Dewey and of the fact that the letter of August 1, 1914, does not refer to "the necessity of bringing the Navy to a state of preparedness," as stated in the resolution adopted by your body, it does not appear to be in the public interest to transmit the confidential communication of the General Board of August 1, 1914. No other report from the General Board touching preparedness has been received except those published as appendices to my reports and in my hearing before the House Committee on Naval Affairs.

Respectfully,

JOSEPHUS DANIELS.

The Senate of the United States,
Washington, D. C.

Apr. 29. . . . *Army & Navy Journal* has editorial "Admiral Fiske & the Secretary," saying a naval correspondent says so and so—recounting facts stated by him, showing I did show Sec. the Unpreparedness Letter.

From Washington, I returned to the war college. Then I wrote the following letter:

U. S. Navy War College,
Newport, R. I., April 29, 1916.

To the President of the Senate:

In a communication to the Senate, dated April 21, 1916, transmitting a copy of a letter dated Nov. 9, 1914, to the Navy Department from me as Aid for Operations, the Secretary of the Navy makes the following statement:

"This communication was not furnished me, and I did not know of its existence until long after it was written. I find upon inquiry that it was filed with the chief clerk, without my knowledge that it had been written. Although Rear Admiral Fiske was in my office daily, he did not tell me he had placed the communication on file. His article was written after the estimates for the Navy, as required by law, had been submitted; and I was left in ignorance of its existence, while Congress was considering legislation for the increase of the Navy, and actually enacting legislation which has secured the best organization the Navy Department has enjoyed in its history. I was greatly surprised when I learned that a communication deemed important enough now to be the subject of a Senate resolution was not considered by its author of sufficient importance for him to present in person to me, instead of depositing it, without acquainting me of his action, in the files of the Navy Department."

2. This statement constituted an accusation against me of a grave breach of official propriety—in fact, of actual underhandedness—of an attempt to conceal an important letter from the Secretary; while as a matter of fact, I was always scrupulously careful never to permit him to receive, or to remain under, any mistaken impression, or to be in ignorance of any important matter, if I could prevent it.

3. The statement appeared in the New York *Herald* and in many other papers on April 23, 1916, and injured my reputation for fair dealing.

4. For this reason I respectfully request permission to appear before such persons as you may designate, and state facts which I and other officers remember very clearly, and which are noted in my diary, showing that there has been a lapse of

memory on the part of the Secretary. In particular, I wish to show the two following entries that appear in my diary:

Nov. 5. I showed Secretary paper I had written to him, stating Navy is unprepared and needs more men, more training, and a general staff. He made almost no comment on my paper, though he read it carefully. During conversation, Sec. referred to time in early April, 1913, etc., etc.

Nov. 10. I showed Assistant Sec. a copy of my letter to Sec. on unpreparedness of the navy, lack of training, lack of general staff, etc. He said, it was bully and he would keep it, etc.

5. Attention is invited to the fact that, although the copy of the letter sent to the Senate was dated Nov. 9, while the entry in my diary was Nov. 5, yet nevertheless my diary shows that the contents of the letter were the same as the contents of the letter of Nov. 9. My recollection is that I kept the letter on my desk a few days, intending to take up the matter again with the Secretary, but finally decided not to do so, but merely to file it; and that a fresh copy was made. The date was probably changed by inadvertence, but no changes were made in the letter beyond possibly some verbal alterations. Certainly no change was made in the character or purport of the letter.

I should also like to prove by my diary that this letter was merely the concentrated essence of a great many oral conversations carried on frequently after the war began, in which I repeatedly urged on the Secretary the peril of the country and the need for more men, a General Staff and more progressive training.

7. In case you do not deem it wise to grant this request, I then ask you as a matter of justice, to give this letter as much publicity as was given to the letter of the Secretary.

Very respectfully,

BRADLEY A. FISKE,
Rear Admiral, U. S. Navy.

I was much surprised that the Secretary should state that "the letter of August 1, 1914, does not refer to the necessity of bringing the Navy to a state of preparedness." It was my intention that the letter should urge it, and it was my recollection that it did. A reference to the entry in my diary under date of Aug. 1, 1914, con-

firmed me in this recollection. I did not think it proper to state this in my letter, however, as it might be interpreted as questioning the veracity of the Secretary.

May 3. The newspapers say that Vice-President Marshall gave my letter to Naval Committee to decide what to do with it, that Lodge defended my action and Tillman said I was "in a mud hole."

May 4. Newspapers state that Senator Tillman read my letter in the Senate and then declared it was due to wounded vanity, disappointed ambition, etc., and Senator Lodge defended me. *N. Y. Sun* and *N. Y. World* have strong editorials saying the case must be investigated: *World* is particularly strong.

May 8. Received characteristic note from T. R. "I am very glad to get your piece on Naval Strategy, and to sit at the feet of Gamaliel."

May 15. The newspapers print with appropriate headlines an open letter written by the American Defense Society to the President, urging him to investigate the "question of veracity" between Sec. Nav. and me!

The letter of the society was as follows:

New York, May 12, 1916.

The President of the United States,
White House,
Washington, D. C.

Dear Mr. President:—

The American Defense Society desires to call your attention to an unfortunate situation.

As the result of a request from the United States Senate, the Secretary of the Navy recently made public a letter written on November 9th, 1914, by Rear-Admiral Bradley A. Fiske, who was then Aide for Operations.

The Secretary of the Navy has stated that his Aide for Operations filed this letter with the chief clerk of the Navy Department and did not show it to the Secretary. Admiral Fiske states that he handed the letter to the Secretary of the Navy as the latter was standing at his desk in the Navy Department, and he read it carefully.

An issue of veracity has thus arisen between Rear-Admiral

616 FROM MIDSHIPMAN TO REAR-ADMIRAL

Bradley A. Fiske and the Secretary of the Navy. Mr. President, we respectfully petition you, in fairness to your Secretary of the Navy, and fairness to a gallant naval officer, not to allow this matter to remain uninvestigated.

Admiral Fiske graduated from the Naval Academy in 1874; he has given forty-two years of service to his country. When he served as navigating officer of the *Petrel* at the battle of Manila, he was cited by his captain for "eminent and conspicuous conduct in battle," and by Admiral Dewey for "heroic conduct"; his series of inventions have done more than those of any other man to place the United States Navy in a pre-eminent position; his telescope sight has been adopted by every navy in the world, and is chiefly responsible for the improvement that has taken place in the naval gunnery since 1898.

Admiral Fiske is recognized throughout the Service as the logical successor to Admiral Mahan; his writings on naval strategy mark him as the leading strategist in the United States Navy. His record, therefore is one of gallantry in battle, coupled with faithful attention to the less spectacular duties of a naval officer in time of peace. Never before has there been a blot on his record; today he stands accused by your Secretary of the Navy of negligence and untruthfulness, for if he filed his letter on the unpreparedness of the Navy with the Chief Clerk, without showing it to the Secretary, he was culpably negligent of his duty. This, he says, he did not do. We earnestly request that, without delay, you will order an investigation.

Very respectfully yours,

(Signed) C. S. THOMPSON,
Chairman Executive Committee.

May 16. N. Y. *Times* and *World* have editorials, insisting that "question of veracity" between Sec. Nav. and me be investigated."

May 24. The newspapers publish a letter from President Wilson to the American Defense Society in reply to their letter of May 14, in which President quotes a letter from Sec. Nav. saying he accepted my statement that I had shown my Unpreparedness letter to him and he had read it!

The letter of the President read as follows:

The White House,
Washington, May 22nd, 1916.

My Dear Sir:

I am in receipt of your letter of the twelfth of May. I referred it to the Secretary of the Navy and he has furnished me the following memorandum:

"Some days ago, in response to a resolution of the Senate, I transmitted to that honorable body a copy of a communication written by Rear Admiral Fiske in November, 1914. In transmitting the letter I stated that I had not seen it and did not know that it had been filed until long after it was filed with the chief clerk.

"In a recent letter to the Senate Rear Admiral Fiske stated that my statement showed a 'lapse of memory,' because he had presented the letter to me and I had read it. I have no recollection that this paper was ever presented to me or of reading it.

"Inasmuch, however, as Admiral Fiske states that he did show it to me before it was filed I of course accept his statement. It was his custom while aide for operations to present to me scores of papers bearing upon all naval matters. It is utterly impossible for any Cabinet Officer in the multiplicity of papers presented to him to recall all of them.

"I had talked with Rear Admiral Fiske several times about the subject matter of the communication, upon which I had rather fixed views. But I did not, when my letter was written to the Senate, and do not now, recall that he had any time committed his views to paper, presented them to me or placed them on file."

Inasmuch as the difference referred to in your letter between the Secretary of the Navy and Rear Admiral Fiske is merely one of recollection of an incident which occurred in November, 1914, and inasmuch as the Secretary says that, while he has no recollection of having read the communication by Rear Admiral Fiske, he is willing to accept the Admiral's statement, the matter does not seem to me to call for any comment.

Very truly yours,

WOODROW WILSON.

May 25. Letter from Dr. Graeme Hammond says no need for apprehension about Jo."

618 FROM MIDSHIPMAN TO REAR-ADMIRAL

During the preceding two years my wife's health had caused me great anxiety. The physicians did not seem to be able to locate the cause of her distress; but finally they declared that her system indicated a nervous malady.

June 2nd. Adm. Benson made adulatory speech at U. S. N. A. dinner Annapolis last night about Sec. Nav. and telling the fine things he and Sec. had been doing during past year. Unprofessional.

June 11. Sunday. . . . Leave Newport for N. Y. tonight and bid farewell to my naval life.

June 13. Retired today. 62 years old. Had a wonderful ovation from American Defense Society in big room of Great Northern Hotel, hung with flags, etc., during which I was presented with a book by the Society, my name on outside in gold letters, etc., etc., letter read to me, etc. I made a speech in answer, and then several photographers and "movie men" took pictures of us.

The letter from the American Defense Society, read as follows:

AMERICAN DEFENSE SOCIETY
303 Fifth Avenue
New York

OFFICE OF THE TRUSTEES.

Dear Admiral Fiske:

With sincere pleasure we hand you this album containing extracts from the leading papers of the country which should be of particular interest to yourself.

To have been instrumental in having justice done in this public way to a gallant and distinguished officer of the United States Navy is a source of satisfaction to the American Defense Society.

And may we say in conclusion that your dignified and courteous bearing in the trying circumstances of an extremely unpleasant experience has won universal admiration, and has increased, if that is possible, the high regard and esteem in which you are held not only by the members of the American

Defense Society, but by millions of your fellow countrymen.

Very respectfully yours,

(Signed) J. H. Corr,

Chairman of the Board of Trustees.

June 13, 1916.

CHAPTER XLI

WAR CLOSE AT HAND

JUNE 13. Sunday. Spent four days with Poultney Bigelow at Malden on Hudson:—very good time, very simple life, etc.

July 31. Arrived Jamestown, R. I., and established ourselves at The Thorndike.

Aug. 17. Mr. Burton J. Hendrick here yesterday and today to get me to write articles for *World's Work* of which he is one of the editors. I agreed to write four articles, beginning January, of about 4,000 words each, etc.

Aug. 18. Went on board *Wyoming* and talked to young officers as well as to C in C and Captain about horizometer. Told them about preventing enemy's range finding by my old scheme of putting strips of wood, etc., on our masts, etc. At Captain's (Wiley's) suggestion, I called attention of Department to it in an official letter.

This scheme of preventing range-finding by an enemy was a scheme that I had devised when I was executive officer of the battleship *Massachusetts* in 1902. I had told possibly half a dozen officers about it under the pledge of secrecy, because I thought it would be a very valuable thing to use in case we ever got into war, but I wanted the idea kept secret. The scheme was simply to break up the smooth lines on a ship, such as the sides of masts, funnels, etc., by putting irregular strips of wood on them, or pieces of canvas that would flutter. To use the ordinary one-observer range-finder, a smooth vertical line is necessary; and I found by some experiments which I carried on on board the *Massachusetts* that accurate range-finding could be prevented by that simple means. One day I sent out a whale-boat to a distance of about half a mile from the ship, with her two masts stepped.

One mast had the irregular pieces of wood nailed on it, and the other was in its ordinary condition. I tried using the range-finder myself, and I found I could measure the ranges of the smooth mast very accurately, but of the other one only inaccurately. I did not tell anybody what I was trying to do, and I fancied from some of the fragments of comment that I heard that some people thought I had gone crazy.

During the fourteen years that had intervened, all the navies had gone ahead using range-finders, and I had never heard an intimation from anybody that any one realized how easy it would be to prevent range-finding. The few officers to whom I had confided my scheme seemed very much surprised at what I told them. On August 18 Captain Wiley said he was so sure that we were going to get into war that he urged me to explain my scheme to the department officially.

So I wrote a letter to the department, and I got Admiral Knight, as president of the war college, to put a favorable indorsement on it, and recommend that it be tried in the fleet. The Navy Department never answered my letter; but a few weeks later, Admiral Knight received a letter, signed by Admiral Benson, as acting secretary, saying that my letter had been received, etc!

By reason of the great attention that has been drawn to camouflage, I have recently been informed that there is no longer any reason for my maintaining secrecy in regard to my device for preventing range-finding.

Aug 20, Sunday, N. Y. *Times* has illustrated interview with me in first page Magazine Section; headed "*Politics is Foe of Preparedness.*" Rec'd telegram from a Mr. — asking if I would consider presidency of Shipbuilding Co., etc.!!

The interview in the *Times* was called sharply to the attention of the reader by a hideous picture of me.

The first paragraph read as follows:

The dangerous enemy of the United States is not Germany or Japan; it is the American politician. It is not the open foe; it

is the secret poison that reduces our power to repel the foe. It is not the army and navy of any foreign power, because we can raise an army and navy better than theirs; it is the politician who prevents our getting an adequate army and navy; who persuades the people that such an army and navy will cause a horrible thing that the politician calls "militarism." The nation can gain the victory over a foreign foe, but is powerless against the politician; "the soulless politician," as Whittier calls him, "who gambles for office with dice loaded with human hearts." Few men die by reason of external violence; it is internal disease that kills them. From the standpoint of national longevity, politics is a disease.

Aug. 29. . . . Mr. — appeared yesterday and offered me presidency of new Company, the "— shipbuilding company," at terms which are very tempting to a poor naval officer. After talking it over with Jo, I declined. President signed Navy Bill, including the General Staff provision!

Thus was the navy finally given a general staff against the opposition of the Navy Department and half of the House Naval Committee. I feel that I have not lived in vain.

Sept. 4. Jo has been taken very ill. On advice of Dr. Buckler, I am taking her to N. Y. this evening. Jo was not really ill till Friday, Sept. 1st.

Sept. 9. Saturday. Dr. Coe and nurse & I took Jo to Roosevelt Hospital in her car. She stood trip quite well.

Sept. 10. Sunday. Jo resting fairly well, with assistance of Codeine and other sedatives. Carrie is in Washington, packing up our household goods in Stoneleigh Court for shipment to N. Y. Sent Marie (Jo's maid) to Washington.

Sept. 11. Dr. Coe says he must operate tomorrow. He told Jo this p. m. & she took news tranquilly.

Sept. 12. Coe operated from 9 to 10 this forenoon. Jo stood operation well & was back in her room by half past ten. I saw her in the afternoon from 4 to 4.30. She was in a good deal of pain & moaned & groaned a great deal.

The next five months were the most anxious time of my life. My wife rallied well from the operation, but failed to gain strength afterward. About the first of

October she began to get weaker and during the latter part of October she was virtually unconscious most of the time. I spent an hour with her every forenoon and every afternoon. During the entire month of November she was virtually oblivious of her surroundings most of the time, and was in coma, so the doctors told me, a great part of the time. In the early part of November no one expected her to live; but at the same time there was no instant when anybody thought that she was going to die soon, because her heart kept beating with a full, strong, and regular stroke. Toward the latter part of November hopes began to be entertained of her recovery. She progressed uniformly, but with extraordinary slowness, all during the month of December, but oblivious of her surroundings and unmindful of the presence of anybody.

This is a very large world, and many things are happening in it. People who are ill, and the friends who are tending them, are on the sidewalk of life, while the great procession moves down the avenue; they are like the wounded in the hospitals, while the battle is raging on the field near by.

During the time that my wife was lying at death's door, the procession was moving by that door. Part of that procession I saw, as some of the entries in my diary testify.

Sept. 19. . . . The morning papers devote great attention to the British Land Dreadnought. I showed Wagstaffe last night the picture in the *Popular Science Monthly* of last (I think) October, illustrating an extract from my essay "Naval Power" published in *Naval Institute* in 1911.

Oct. 9. German submarine U-53 that came into Newport on Saturday, torpedoed from "6 to 9" vessels yesterday near Nantucket!

Oct. 14. My book is out today, & is conspicuously advertised in the *N. Y. Times*, *Sun* & *Tribune*.

Oct. 15. Sunday. *N. Y. Times*, *Sun* & *N. Y. American* publish in full my interview with Wagstaffe on "What the Visit

624 FROM MIDSHIPMAN TO REAR-ADMIRAL

of the U-53 Portends." I believe it is published also in various other papers in various cities.

Oct. 17. Morning mail informs me that at the Annual Meeting of the U. S. Naval Institute, held at the Naval Academy on Oct. 13, I was again elected President. This is the sixth time; and it beats the record, except that Admiral Luce was elected eleven times. It has not been the custom to elect a man as President who is on the retired list. In fact, Luce, who ceased to be President in 1898, was the last retired officer to be elected President."

Oct. 20. . . . I received a letter from Theodore Roosevelt to whom I had sent my book, in which was the following paragraph:

"There is no one man to whom the United States Navy owes as much, during the last three and a half years as to you. You have shown the very rarest type of courage in standing up for it."

The reviews of my book were extremely good. The book attracted much more attention than I expected, and the Conference Committee on Preparedness sent a copy to each senator and each member of the House of Representatives, personally.

The book was called "The Navy as a Fighting Machine," and was written to show that a navy must be designed *as a whole*, like any other machine; that it must be prepared and operated according to the principles that govern fighting (strategy); that it is merely a development of more primitive weapons; and that it will be found ineffective, when used against a navy like the German navy, unless it has been prepared and designed with skill, and unless it is operated in war with skill. It proved also that a navy is like any other machine in that it cannot be designed, prepared, and operated with skill unless the man at the head understands it thoroughly. It showed how the personality of the chief of every organization pervades the entire organization, and characterizes its activities.

Oct. 30. . . . Committee from Lotus Club brought me in-

invitation to be chief guest at a Club dinner. I declined on account of Jo's health.

Nov. 6. Mr. E. P. Dutton took me for a drive of an hour in a small buggy behind a fast horse that he drove himself. He is 86 years old and two months and has been a half invalid all his life! This shows how well the human machine will last if good care is taken of it.

Nov. 7. . . . Election Day.

Army and navy officers seldom vote. This is not because they are not allowed to do so, but because they are continuing officers of the Government, and do not think it right to belong to either political party. At the same time I think that nine tenths of them, except those who come from the South, prefer to have the Republican party in power; because of the two, the Republican party seems to take the broader international outlook, and to be less partizan and provincial. Army and navy officers deplore the influence of politics in national and international affairs, especially in regard to the army and navy; but we think that the Republican party is the more patriotic of the two, and we know that it is more favorably inclined toward an adequate army and navy.

Some time in the latter part of 1916 Admiral Dewey said to me substantially as follows:

"The situation in the country now is in one way almost exactly like what it was before the Civil War. This is one reason, although it is n't a very good one, why I feel sure that we are going to get into this war; you know when similar conditions prevail, similar results are apt to follow. Now, just before we got into the Civil War, things were as they are now; the South was in charge of the administration and the important committees in Congress, and was running the Government for the benefit of the South, with the North paying the bills."

Nov. 30. . . . Thanksgiving. Benson made awful testimony before House N. Committee against aeronautics!!! Practically busted all I had done.

626 FROM MIDSHIPMAN TO REAR-ADMIRAL

Dec. 11. In England, Lloyd George has formed a "War Council" of five Cabinet officers of which he is head. All are civilians and are going to manage all the war business. I'll bet a dollar that they'll direct the actual military and naval operations and do a world of harm. Unless they go contrary to the way men have gone in the past, they'll not realize the necessities and factors of military affairs, and will interfere. The resulting danger to England looks very great to me.

Dec. 12. . . . Lunched with the office staff of "*Life*."

Dec. 18. . . . Adm. Benson testified before Committee that "in the navy we only need aviation for two purposes"—scouting from the fleet and spotting the fall of shot in battle. B-r-r-r, B-r-r-r. And this from a commissioned officer in the navy of the country of Langley and the Wright brothers, in November, 1916!!!

The following is a quotation from Page 575 of the Record of Admiral Benson's testimony before the Committee of Naval Affairs, House of Representatives, *November 29, 1916*:

The question of aviation is a very mixed one, I think, in most everybody's mind, because in the Navy we only need aviation for two purposes: First, for scouting, to get information from the enemy, when we want to act in conjunction with the fleet; and the other is to spot the fall of the shot in a battle. Now, it is the easiest thing in the world—we might get a thousand or more than a thousand aircraft, if we just wanted them to light on the land and fly over the land, but we, in the Navy, *only want them for two purposes*, and we want to concentrate all our energies and everything along those lines, to keep on until we have found what we want, and we have been experimenting with a catapult—an arrangement that fires the aircraft off the deck of the ship, because if you do not—if you are on the water, it is almost impossible for aircraft to get off the water, if there is any sea on; if it is at all rough you can not do it, because the machine dives head into the sea that is swirling over it, and it is destroyed; but if it can be fired from the deck of a ship, and go out into the air, as we are doing now from the *North Carolina*, and we hope in a few days from the *Washington*, and later from the *West Virginia*—if he can go out and

fly at the rate of a hundred miles per hour for possibly five hours, he can come back, or send information back by radio to the ships in regard to the enemy. This is the primary use for which the navy wants aircraft; and the next thing is in battle for spotting the fall of the shot.

How can we "highly resolve that these dead shall not have died in vain" when such testimony is officially given by the chief of naval operations to Congress!

That this testimony showed a knowledge far from up to date, is indicated by the following list of achievements by aircraft that is taken from a book on naval aeronautics by Henry Woodhouse that appeared about six months after Benson's testimony, that is, in June, 1917:

1. Attacked ships and submarines at sea with bombs, torpedoes, and guns. (Seaplanes and dirigibles used.)

2. Bombed the enemy's bases and stations. (Land aeroplanes, seaplanes and dirigibles used.)

3. Attacked the enemy's aircraft in the air. (Aeroplanes and seaplanes used.)

4. Served as the eyes and scouts of fleets at sea. (Dirigibles, seaplanes and kite balloons used.)

5. Protected ships at sea and in ports against attacks from hostile submarines and battleships. (Seaplanes and dirigibles used.)

6. Defended and protected naval bases and stations from naval and aerial attacks. (Land aeroplanes, seaplanes and dirigibles used.)

7. Convoyed troop ships and merchants ships on coastwise trips. (Dirigibles and seaplanes used.)

8. Patrolled the coasts, holding up and inspecting doubtful ships, and convoying them to examining stations and searching coasts for submarine bases. (Dirigibles used.)

9. Prevented hostile aircraft from locating the position and finding the composition and disposition of the fleet, getting the range of ships, naval bases, stations, magazines, etc. (Land aeroplanes and seaplanes used.)

10. Located, and assisted trawlers, destroyers, and gunners

in capturing or destroying hostile submarines. (Seaplanes, dirigibles and kite balloons used.)

11. Cooperated with submarines, guiding them in attacks on ships. (Dirigibles and seaplanes used.)

12. Located mine fields and assisted trawlers in destroying mines. (Dirigibles, seaplanes and kite balloons used.)

13. Served as the "eyes in planting mines," minimizing the time required for mine planting. (Dirigibles, seaplanes and kite balloons used.)

14. Served as "spotters" in locating the position of the hostile ships and directing gun-fire. (Dirigibles, seaplanes and kite balloons used.)

15. Served as carriers of important messages between ships which could not be entrusted to wireless owing to the possibility of the enemy wireless picking up the messages, such as communicating to incoming ships information regarding the location of mines, submarines, and courses, to avoid mistakes and confusion. (Seaplanes and dirigibles used.)

16. Carried out operations over land and sea intended to divert the attention of and mislead the enemy while strategical operations were being carried out by the fleet or squadrons. (Land aeroplanes, seaplanes and dirigibles used.)

17. Have made it possible for commanders to get films of theatre of operations, photographs of the location, composition and disposition of hostile naval forces, and photographic records of condition and of the movements and operations of their own, as well as of the hostile naval forces.

These seventeen different kinds of employment of naval aircraft had been carried on on both sides in the North Sea during the war, and were perfectly well known. As far back as *December 24, 1914*, the English had sent an expeditionary force of seaplane carriers which had lowered bombing seaplanes into the water, and those seaplanes had bombed Cuxhaven, Germany's naval base. On February 12, 1915, thirty-four British airplanes and seaplanes, under the command of Wing-Commander Samson, raided Bruges, Zeebrugge, Blankenberghe, and Ostend. The fact also that the British had sunk Turkish

vessels by torpedo-planes in 1915 and 1916 was also well known.

My first article in *The World's Work*, which appeared in January, 1917, was directed to showing the impossibility of expanding a navy suddenly in the excitement of imminent war, and maintaining its efficiency during the operation. The first paragraph read as follows:

"A man rushed violently on to the platform of a railroad station, but just missed the train.

" 'You did n't run fast enough,' said a by-stander.

" 'Oh, yes, I did,' was the reply; 'but I did n't start soon enough.' "

During the months that had gone by I had become increasingly alarmed at the inaction of the United States. I saw the enemy getting closer and closer, and no sign of preparation on our part. Believing, as I did, that the odds were in favor of Germany, because history showed that wars had nearly always been won by superior strategy and not by superior numbers or material I was amazed at the complacency of the American public. I realized that, by such articles as I published in *The World's Work*, and especially the one just printed, I was making myself obnoxious to many influential people, and exposing myself to being regarded as a militarist, and also to other dangers. But I was so thoroughly alarmed that I had to cry out regardless of consequences. Fortunately, the press of the country seemed to support me. I realized that I could go no further than a position in which the press would support me, and for this reason I watched the comments of the press carefully, and noted them in my diary. I knew that if I went too far, whatever influence my experience and age might give me would be entirely lost, and that all that I had been able to do would be undone.

Jan. 6. . . . Attended luncheon of the Republican Club and discussion about preparedness. After the regular speeches had

ceased, I was called on. I spoke perhaps three minutes. N. Y. *Times*, *Sun*, *Tribune* and *World* head a column on a page (respectively) "Prepare or Perish says Admiral Fiske," "Prepare or Perish is Fiske's Warning," "Fiske warns of Peril, Prepare or Perish his Slogan," and "Nation Warned to Prepare or Perish by Admiral Fiske." N. Y. *Herald* simply gives a paragraph to it, saying, "Rear Admiral Bradley A. Fiske said, 'We must prepare or Perish.'"

The space and display given my brief remarks seemed to me extraordinary, and to show that New York was awaking to facts.

Jan. 18. . . . Boston *Transcript* published my editorial on Dewey with only two very minor changes. I tried the effect of music on Jo, playing several selections on the victrola. It affected her pleasantly but not very greatly. Nat. Institute Efficiency made me Chairman Committee to get 5 lecturers for Chatauqua—I to be one!

Jan. 23. *Life* has a splendid and exceptional kind of a review of my book, not placed under the heading of book reviews, but as part of the news.

Jan. 25. Spoke in Newark last night. Had splendid reception. Got along bully. After my regular speech, I was asked to continue and make an informal talk about my own experiences in the Navy. I did so.

Jan. 26. Spoke last night in D. A. R. Convention Hall in Wash. for Nat. Sec. League. Prof. Thayer, then ex-Sec. War Stimson, then I, then ex-Sec. Navy Meyer spoke. My interjected remark that America was not "Uncle Sam, but Aunt Elizabeth" took best of all I said. The big papers this morning devote nearly all their space to Elihu Root's speech, made before League in afternoon. This is right; his was far the best, and carried the most weight.

In preparing my speech, I had written the following paragraph: "America is like a woman in the family of nations, because she depends for her safety on the absence of physical danger, or on the strong right arm of others. Uncle Sam is no name at all for us—it should be Aunt Elizabeth." I decided, however, not to speak

this, thinking it might sound undignified, and unworthy of so serious an occasion; but when I got to speaking, out it came; and the audience liked it better than anything else I said.

My article in *The World's Work* for February was written to persuade the people not to fight Germany along the old lines; because I felt sure that Germany had prepared with German thoroughness to meet her enemies on just those lines; so that *a new line of attack was obviously essential to success*. The article was called, "The War's Most Important Hint to Us." The last two paragraphs were as follows:

We Must Produce a Great Invention

The overwhelming advantage that can be secured by the sudden and unexpected interjection into a war of some new mechanism, and its use in actual battle before the enemy can learn how to oppose it, first assumed distinct importance in the events of our Civil War. It has assumed still greater importance in the present war, because of the greater importance that the scientific arts have now acquired. Inasmuch as the United States is the most inventive nation on the earth, and inasmuch as we may be threatened with a danger on the sea that we shall need all our resources to avert, the conclusion seems logical that we ought to try to supplement our present naval strength by some new invention or device that will do for us now what the *Monitor* did.

Prominently displayed in the article was an illustration of a torpedo-plane sinking a ship.

Feb. 7. . . . Banquet Natl. Assn. of Manufacturers of Medicinal Products. Gen. Wood and I made patriotic speeches. A man near me, while I was making final appeal, interjected occasionally the words, "damn rot, damn rot."

CHAPTER XLII

THE UNITED STATES DECLARES WAR AGAINST GERMANY

ON February 12, 1917, I gave a lecture for the Aero Club of America in the Grand Central Palace on the occasion of the Pan-American Aëronautical Exposition there. It described my torpedoplane and the uses for which it was intended.

About this time I saw occasional suggestions in the press and magazines that I ought to be Secretary of the Navy. I can think of few positions more distasteful to me. If the country wanted the navy to be a navy simply, and not a political asset for successive administrations, the position of head of the navy would be attractive, because it would give an opportunity of doing beneficial and constructive work. If a navy is a political asset, a politician should be at the head of it.

On Feb. 19 *The Independent* published an article written by me called, "The Navy Needs Strategy," which pointed out that the greatest single cause of Germany's military efficiency is that in Germany the most important subject of thought and endeavor is strategy, while the word is seldom even heard in the United States, with the result that all our efforts at building and operating a navy and an army are not properly or systematically directed. We are like a man who is strong, but clumsy, and not able to contend against a trained pugilist.

Mar. 18. Sunday. . . . I gave Aero Club a memorandum saying battleplanes best defense now.

At this time, I was sure that we would be at war with Germany in a very short time. As we were not yet at war, I could not intimate that the aeroplanes were to

be used against Germany, and so I spoke of them generally in connection with national defense.

Some of the paragraphs of my memorandum read as follows:

My life in the navy brought me into intimate contact with all the advances in naval construction, from the little *Saratoga* in which I made my first cruise as cadet midshipman, to the superdreadnought *Florida*, which was my last flagship. The military value of concentration was, of course, impressed unceasingly upon me; and with it a realization of the fact that the main aim of strategy and tactics is to bring a preponderating force to bear on a given point before the enemy can prevent it. *To do this we need concentration of power in as few units as possible and ability to move these units as rapidly as possible.* POWER AND MOBILITY ARE THE PRIME AGENCIES OF THE MILITARY ART.

Now, at the present time the unit in all armies is the soldier and his musket. We seem tied down to that slow and feeble little unit. But, are we really? The navy seemed tied down to the little sailing frigate; so much so that, even after the *Monitor's* achievements in our civil war, we returned to the sailing frigate. The competition of nations, however, forced us to take up larger units; and now we have the *Pennsylvania*.

Is there no way in which this great inventive and constructive nation can get some more powerful and mobile unit than the soldier and his rifle? Can we not get more defensive usefulness out of the intelligent collegian, technician and chauffeur than by marching him in a regiment with a little musket in his hands? Is there no device by means of which large units of power can be carried, which is not subject to the limitations of speed and size that restrict a land battle ship to small dimensions?

Yes, and that device is now being used in Europe after having been designed and manufactured in the United States. It is called the battleplane. Such a device recently carried twenty-seven passengers; and another, an air cruiser, carried 3,500 pounds of crew and equipment. Some of the largest battleplanes are being constructed in the United States; and one of the aeroplane manufacturers states that he can easily build a battleplane capable of carrying and launching a full size torpedo weighing 2,500 pounds.

The size and power of the aeroplane has already gone far beyond the limits set for its possible development by certain engineers only three years ago. The practical difficulties of making it larger still are quite apparent; yet, nevertheless, no theoretical limits to its size and power have yet been accepted by aeronauts. That the aeroplane is now the best single weapon against the submarine is conceded. That the aeroplane, and especially the battleplane, will rapidly advance in size and power within the coming year and afterward, is the mature belief of many aeronauts. Should we not therefore immediately investigate its capabilities not only as a scout and accessory, but as a *major instrument of warfare*?

I do not suggest the abolition of the soldier and his musket, but neither do I suggest the abolition of the boat pulled by the oars of rowers. I merely suggest that, as the boat pulled by rowers was superseded for large operations by the sailing ship, and as the sailing ship was superseded by the more mobile steamer with broadside guns, and as this type of warship was superseded by the turret ship, and as the turret ship has been expanded into the superdreadnought, so the soldier and his musket may be superseded, for important operations, by the immeasurably more powerful and mobile battleplane.

If so, the more quickly we act the better. "Hindenburg never sleeps."

Mar. 19. . . . N. Y. *Herald* publishes my battleplane memorandum in full; *Tribune*, *Sun* and *American* publish about $\frac{1}{3}$ of it; also *Eve. Telegram* and *Eve. Sun*.

Mar. 20. . . . I received letter from Sec. Nav. forbidding me to make any address without his permission.

Sometime before this I had been elected a trustee of The American Defense Society. I accepted the position with great alacrity, because I had become much impressed with the purity of aim of the society, and the excellent work it was doing in arousing the patriotic spirit of the country. The trustees were to have a luncheon on March 20, and I was asked to prepare an address to the trustees, setting forth my views as to the possibility of our improving the national defense by building up naval and military aeronautics. I had prepared a brief memo-

randum, and was about to start downtown to attend the luncheon when I received the Secretary's letter. So when I was called upon to speak at the luncheon, I told the trustees of the prohibition. The trustees were indignant, and gave out to the press an announcement which was published in most of the papers the following morning.

Mar. 21. N. Y. *Eve. Sun* has editorial, headed "War on Admiral Fiske." . . . Mr. Herbert L. Satterlee persuaded me to prepare speech for Navy League meeting in eve. of Mar. 27 and ask Sec. to approve it. I consented and mailed proposed address to Dept. Meeting in Chamber of Commerce abandoned, due to my not being able to speak because of gag. Letter from Cronan says Sypher told him in Manila that he took my letter Nov. 9, 1914, from files by X's orders and gave it to X. So X is the man!

Mar. 25. . . . I am making a Torpedoplane and asking to be permitted to continue at this work, etc. . . . The Conference Preparedness Committee has ordered one of my books, "The Navy as a Fighting Machine," to be sent to each Senator and each Representative, with a personal inscription on the fly leaf of each book! I give up my 30 cents royalty on each book, and the publishers give up a similar profit. Sec. Guy of N. Y. Elect. Society went to Wash. to persuade Sec. to let me speak before N. Y. Electrical Society.

Mar. 26. Telegram from W. H. Stayton of Navy League in Washington says "Department has just notified me that your speech was approved and mailed to you this morning.

I had written my speech quite hastily, at Mr. Satterlee's request, and I did not really believe that the Secretary would permit me to deliver it, though it seemed to me to contain nothing which was at all heterodox or which would give any offense to any one. I knew that a declaration of war would come in a few days, and I also knew that the people of the country misapprehended the situation entirely. The utterances of even our greatest men, the editorials in even the best newspapers, the remarks that were made in private conversation, and the conversa-

tions I heard on the streets and in public places, all showed me that the American people felt no doubt of the success of the Allies. I felt sure that many of them, even some who were supposed to be "statesmen," believed not only that victory was to perch on the banners of the Allies, but also that it was going to perch there soon.

I was so fully convinced that the Allies were going to lose that it took me some time to realize how thoroughly the great body of the public held the contrary belief. In my private conversations with intimate friends I told them what I believed, under the pledge of secrecy, and I was called a pro-German as my reward. But I could not possibly see how the Allies had any reasonable chance in view of the proved disgraceful incompetence of Russia, which had been whipped by little Japan only eleven years before, and of the pacifist-ridden condition of Great Britain and France. The only two factors that seemed worth counting on were the magnificent navy of Great Britain, which could not get at the German Navy and the magnificent army of France, which, magnificent as it was, was not so good as the army of Germany. And I knew that even the magnificent navy of Great Britain and the magnificent army of France were not directed, in the most important matters, by naval and military strategists, but by politicians.

The day after receiving Stayton's telegram, I showed a copy of what I had prepared to Mr. Satterlee and Colonel Robert M. Thompson, president of the Navy League. I told them that I much preferred not to make the speech, because my wife was very ill at home that day, and I did not want to leave her. They seemed a little doubtful, and asked to see what I had prepared. When I handed it to them, I said I did not want to make the speech, in any event, if it was like the other speeches that were to be made. They both assured me in the most emphatic way that nobody had prepared anything like mine; and one of them said in a voice that trembled:

"But, my God! Admiral, you don't believe that Germany has a better chance than the Allies, do you?"

"Yes," I said, "but perhaps I had better not say so. I think I had better not make the speech at all."

These gentlemen and some others who were present, however, assured me that what they wanted to know, and what they wanted me to tell the audience, was exactly what I thought; that I knew more about it than anybody else, etc. So I decided to make the address, but to soften some declarations a little.

Certain paragraphs were as follows:

The war itself has been going on for nearly two years and eight months, *and the hard military fact is that the Teutons seem to be ahead so far.* Perhaps few people will dispute the statement that the chances are at least even that, when the treaty of peace is signed, Germany will be better situated relatively to the rest of Europe than she was before the war, and that she may bring about a condition such that she will be allowed to send her fleet to this side.

If Germany is beaten our whole danger will pass away, for *the present.* But as the chances seem at least even that she will not be beaten, we must visualize the fact that her fleet is twice as powerful as ours. The superiority in ships, etc., was not quite so great as two to one when the war started, but it was greater than two to one in number of trained officers and men and organization and strategical skill.

In the summer of 1913, the German fleet carried out manœuvres of a kind that we shall not be able to carry out until our battle-cruisers shall have been drilled in our fleet, that is, not before 1920! The German manœuvres were not secret, of course; manœuvres of such magnitude must be performed in the sight of all men.

We are more behind in aeronautics than in any other thing. But, gentlemen, while aeronautics is the weakest place in our defence, *aeronautics is the one bright spot in the whole situation.*

The battleplane is the most modern instrument of war, more modern than the submarine. It combines the prime military elements of power and mobility in a higher degree than does any other weapon used on land, and, if used in sufficient numbers,

it can direct an attack on a fleet, especially on the light vessels of a fleet, which they have not yet learned to answer. . . . There would be no trouble in this country of one hundred million people in getting the aviators to handle the battleplanes; and I am informed on excellent authority that there would be no real difficulty in getting the necessary machines and training the personnel to handle them in six months.

As we were not at war with Germany then, I had to be careful to confine my remarks to the general subject of the national defense.

The speech was well received by the audience, somewhat to my surprise. I saw no adverse comments on it in the newspapers, except one in the *New York World*; but I could see from the attitude of my friends, and from occasional guarded comments in newspapers, that my estimate of the situation was not accepted at all, and that it created considerable irritation. Some of my friends accused me in a friendly way of being pro-German, and told me it was impossible that the Germans should overcome the Allies. But in a very few months they saw that I was right: some of my friends told me so. The visit of the British and French and Italian missions to this country shortly after we declared war, and the outspoken statements of those missions as to the dangerous condition of the Allies, opened their eyes with a jerk to the real condition of affairs. Their realization of the true situation became clearer after we had entered into the war, and people began to fear that we had delayed our aid too long.

Mar. 28. All N. Y. papers give headlines and plenty of space to my speech. At 9, I received my speech back from Sec. *disapproved!* I telephoned to Operations explaining about telegram from Stayton, and requesting it be explained to Sec. I telegraphed to Stayton, asking him also to explain. Guy telephoned Sec. refused permission for me to deliver my speech, "The Mind of the Navy," to Elec. Society. I shall not attend the meeting tonight.

I received a letter from Stayton, reiterating in the most positive terms the statement he made in his telegram.

Mar. 29. Quite a demonstration at Elec. Society last night because I could not speak, and all N. Y. papers comment adversely on the fact. I got letter from Sec. asking why I had spoken (before Navy League), etc. I answered, explaining. . . . Broke promise to go and speak before Ladies' Special Aid Society, by reason of Secretary's action.

Mar. 30. Special Aid Society made official protest to Sec. about my muzzling, and N. Y. papers devote several inches to it. Broke promise to speak before Aero Club, since I am forbidden. I understand club is indignant.

Apr. 6. . . . U. S. declared war today against Germany. U. S. caught unprepared again!

As a naval officer I had no right to concern myself with the wisdom or unwisdom of our entering the war. But as a naval officer of experience I could not help deploring the fact that we were unprepared when we did enter it. For any man to be caught unprepared by any of the ordinary happenings of private life is considered a mark of inefficiency. We all know men who are always a little behind time, who never see a thing coming until they are hit by it, who seem to have no foresight. Such men never succeed in managing their own affairs, and are continually getting into trouble of one kind or another. We see the same thing in the doings of organizations and of nations. History is full of accounts of disasters, like the fall of Babylon, when a great government has fallen before the attack of warlike savages simply because of its own short-sightedness and inefficiency in regard to such a history-old event as the coming of a war. In many cases the inefficiency has been due at bottom to effeminacy, caused by too great wealth, and the consequent lack of the rugged virtues.

For several years previous to the war in Europe the United States had been following Babylon along the road to ruin, and at great speed. One commanding figure

warned the people of the danger and tried to rouse their manliness, but with small success—Theodore Roosevelt. He was only one man, and on the side opposed to him was a vast army of pacifists and women, headed by the Secretary of State. I heard him (the Secretary) declare in a speech in Baltimore, on September 12, 1914, six weeks after the war had started, that a new era of peace was dawning!

People sometimes say a democracy cannot be efficient. Why? I do not see why a democracy should be any less efficient than an autocracy, and I see many reasons why it should be more efficient. By autocracies I mean hereditary autocracies. Any hereditary government is limited in its efficiency by the degree of efficiency of the hereditary monarch; and the monarch remains at the head of the government all his life, and can exercise all his life the power of a monarch, and be influenced all his life by his court, an influence which has usually been bad. In a democracy, on the other hand, the ruler is elected; and for this reason he must almost necessarily be a man of ability. Being elected for a comparatively brief period, and being confronted with the necessity of returning to his previous status of private citizen after his term of service shall have expired, he is not so independent of popular opinion as a monarch is, and therefore tries more diligently to do his duty. It is true that democracies are sometimes inefficient, but it is also true that autocracies are frequently inefficient. If a democracy is inefficient at any time, it is the fault of the people in the democracy at that time, and not the fault of democracy. All governments are sometimes efficient and sometimes inefficient. The republic of the Athenian cities was very efficient in the Persian Wars, but it soon afterward became inefficient and never became efficient again. The Republic of France was very efficient under the Consul Napoleon Bonaparte, and the Empire of France was very efficient under Napoleon the Great, but very inefficient under Napoleon III. The Republic of

the United States was inefficient during the four years when James Buchanan was President, but exceedingly efficient during the seven years when Theodore Roosevelt was President. This was *because* Theodore Roosevelt was President.

I have no taste for war. I believe that war is due to the sinful passions of men, and is caused mainly by sordid desires for luxury and ease; and that while war itself may not be an unmixed evil, the causes which lead to war represent everything evil that is in our nature. But if a nation does go to war, it ought to go to war prepared. *It is disgraceful to be caught unprepared.* Much as we abhor the methods of the German Government in using its good army and navy to further its own bad schemes, we must in frankness admit that when she did go to war, the effectiveness at once displayed was unprecedented and magnificent. The entry of British Navy and of the German Army into the war equalled in grandeur any feat ever performed by civilized men. The foresight, the readiness, the precision, the courage, the efficiency with which they started instantly to work have a right to our honest admiration;—and we ought to be honest enough to give it.

Did the United States step forth onto the stage of war with the same magnificent stride? Or did we step on the stage like an actor who has not learned his part, and who has not got his costume ready?

This is the country of George Washington. Would he have admired the way in which the country of which he is called the father stepped upon the stage? Would he have been ashamed of his child? I think so.

CHAPTER XLIII

AERONAUTICS IN WAR

DURING the preceding year I had come to have a feeling of great respect for the Aero Club of America, and especially for its leading men, Alan R. Hawley, Henry A. Wise Wood, and Henry Woodhouse. I had gradually realized that they had done more for aëronautics than any other men in the United States, except of course the late Professor Langley and the two Wright brothers, and that they had the confidence of the people. At one time the growing influence of the club had incurred the antagonism of politicians, who accused them of having sordid aims, and had tickled the sense of humor of conservatives, who called them crazy. But even these detractors had now been cured of open opposition, and the public at large had gradually realized that the Aero Club was pure in its intentions, and that they saw things which other people did not see, simply because their eyes were higher above the ground.

Having held the opinion for more than a year that, in our actual condition of unpreparedness, aeronautics could supply greater naval and military power than any other agency, and do it more quickly, I suggested informally to individual governors of the club that the club should urge sending a large aëroplane force to Europe immediately. My suggestion created considerable surprise, but Mr. Hawley, Mr. Wood, and Mr. Woodhouse accepted it almost at once. After a little propaganda work, I then wrote a formal letter to the club.

My letter and the consequent resolution of the governors read as follows:

NEW YORK, N. Y., 16 April, 1917.

Mr. Alan R. Hawley, President,
Aero Club of America,
New York, N. Y.

My dear Mr. Hawley:

I beg leave to suggest that the Aero Club point out the advisability of sending to Europe a large unit of aeroplanes, with trained aviators and appropriate armament.

One thousand battleplanes, armed with rapid-fire guns, bombs, and torpedoes, would constitute a combination of power, mobility, and control at least equal to that of a hundred thousand soldiers armed with muskets, and they could be more readily transported across the ocean and put to useful work in Europe.

I am aware of the difficulties of constructing so great a number of large machines; but *for such work the genius of our people and the number and equipment of our factories are especially adapted.*

Sincerely yours,

B. A. FISKE,
Rear Admiral, U. S. N., Retired.

Copy of resolution adopted by the board of governors of the Aero Club of America at a meeting held on the sixteenth of April, 1917:

RESOLVED, That the Board of Governors of the Aero Club of America endorse the suggestion of Rear Admiral Bradley A. Fiske, that the American Government send to the Front as soon as possible a fully equipped aeronautic unit of a thousand aviators, allowing three machines for each aviator, as being the best means in our opinion to quickly render the most effective service to the Allies.

My letter was published in the *New York Tribune, World*, and many other papers on April 19.

Apr. 29. Congress passed Conscription Bill by a heavy majority! How we plunge from one extreme to the other! And how we will spend money by the tub full, instead of having spent it in a reasonable way during the past 20 years! What a lot of money Bryan, Carnegie & the rest have already cost the country, (for which they themselves will never be made to suffer)

& what a lot of blood their propaganda will entail! My prophecies are coming true. It is silly to defer getting ready until *after* war has begun. Now for confusion.

May 3. . . . Morn. papers publish statement by Br. Admiralty that Br. s. s. *Gena* was sunk by a torpedo discharged by a German aeroplane! So. This is exceedingly important, and shows my invention that I call Torpedoplane is being added to submarine to sink ships!

The statement in the New York *Times* read as follows:

GERMAN SEAPLANE TORPEDOES AND SINKS A BRITISH SHIP

London, May 2. The Admiralty announces that the British steamer *Gena*, of 2,784 tons, was sunk May 1 by a torpedo discharged from a German seaplane off Aldeburg (Suffolk, England).

Two German torpedoplanes coöperated in this work. One was brought down by gun-fire. A sketch published later showed that the mechanism for launching the torpedo was identical with that described and illustrated in my patent application.

The *Popular Science Monthly* for May published a brief article by me in regard to the torpedoplane. The *Monthly* called this article, "Defending America with Torpedoplanes," and illustrated it on the inside of the magazine with three striking pictures, one of which showed a successful attack by torpedoplanes on a column of battle-ships. On the front page of the cover of the magazine was an excellent, though highly colored, picture of a large triplane dropping a torpedo.

May 9. . . . Park Benjamin has fine article in *Independent* on "Fiske Torpedoplane."

May 10. . . . *Tribune* has 1st column first page headed, "Vast War Machine Lacks Motive Power." It lacks rather *directive* power; no one knows what is needed to be done—every one simply wants to do *something* on a big scale. Gave Benjamin sketch for device so air craft can hear submarine sounds, and told him make application for patent.

May 14. . . . Century Co. & Henry Woodhouse ask me to

write introduction to his new book on "Naval Aeronautics." I agreed.

May 18. My dear mother's birthday.

May 19. Went down to Keyport, N. J., with Prest. Hawley & Henry Woodhouse of Aero Club, and inspected new plant of Aeromarine Co. Prest. Uppercu offered a seaplane & pilot to test torpedoplane!

May 21. . . . Council Nat. Defence announced that start will begin on Big Aeronautic Program very soon—3500 aeroplanes first year, etc., & that regular stream of aviators will flow to help Allies. What an indictment of Ante-War unpreparedness; & what an endorsement of my recommendation on March 18 to Aero Club to build battleplanes, & of April 16 to send 1000 aeroplanes to Europe & my recommendation to Am. Defense Society to send seaplanes to Europe to preserve England's food supply!

May 27. . . . A book called "Naval Aeronautics" written by Henry Woodhouse is to be published next month by Century Co. I have written the 3d and 4th chapters and the "Foreword."

May 29. . . . I called on Comdr. J. D. J. Kelley (retired), on editorial staff N. Y. *Herald*, showed him Admiral Sir Reginald Custance's letter in London *Times* of May 9, 1917, & said I thought Germany's submarines could be stopped from coming out of German ports by British watercraft (small) going into & running shallow waters near German coast & countermining the mines, *if* German warships could be kept off from the British small water craft, and that they *could* be kept off by say 100 torpedoplanes! Kelley was seemingly much impressed, & said he would take up the matter in N. Y. *Herald*. I said I wished he would: as I felt a delicacy as to doing it, being the inventor.

May 31. Morning papers publish long accounts of how Germany stole my torpedoplane, etc., and sank *Gena*. . . . N. Y. *Tribune* has column headed, "X (mentioning name of former Aid for Material) May Command Atlantic Fleet."

This column was written by Mr. C. W. Gilbert, from Washington, and said that the navy was very much aroused by this possibility, not because X was of German parentage, but because, in the controversy between Secretary Daniels and me, X, aid for material then, took the secretary's side. One of the paragraphs read:

When it was all over, Fiske was more or less rusticated, and X went up swiftly from a captain's position to a full admiral's job at the head of the Asiatic fleet. In a word, X is what Fiske was not, a diplomat, and used his diplomacy in ways the navy despised. Daniels loved him and the navy loved him not.

June 1. Secretary denies X is to be C. in C. Atlantic Fleet. N. Y. *Herald* has fine editorial on my torpedoplane.

June 3. Sunday. *Herald* publishes letter from Park Benjamin saying Dept. was repeating history, in treating me as it had done in matter of torpedoplane. N. Y. *World* publishes letter from London of May 20, saying the use of torpedo from German seaplane was really an old idea, that British naval officers had experimented on the device in latter part of 1913 & in 1914, etc., etc.! This ignores the fact that it was an *American* invention, and that *Army and Navy Journal* published a detailed account of my patent of July 16, 1912, on June 28, 1913, & that the *Times* copied it—substantially—the next day!!

June 4. N. Y. *Herald* has my article (unsigned) with chart of Zeebrugge, etc., headed "Torpedoplane Valuable Weapon to Hold U-Boats at Their Bases."

This article discussed the value of torpedoplanes for torpedoing submarines *before* they could get into deep waters and thus keeping them from leaving their bases.

June 7. . . . Making crude experiments as to making ships, aeroplanes, etc., etc., invisible by covering them with mirrors.

On June 7th, *Land and Water* of London, England, published my article, "The Nelson Touch." This article was an appreciation of Nelson both as an officer and a man.

June 9th. . . . *North American Review* asks me to write article on "What the navy ought to do and can do." I do not see how I can write anything not distinctly critical—& so I do not think I shall do it. N. Y. *Sun* says Sec. War Baker will send 100,000 aviators to Europe. Nonsense. He is merely following my lead & trying to go me one better.

June 13. My 63d birthday. Adm. Peary gave splendid testimony as to paramount value of aircraft in present war, necessity of sending large numbers of aviators to Europe, etc., etc.

Papers also say War Dept. is going to send 1000 aviators a month to France! Letter from Cronan says I may quote him as to Sypher's telling him he took my letter from Dept. files and gave it to X, Aid for Material. This was Unpreparedness letter.

June 14. . . . N. Y. *Tribune* has editorial headed, "Investigate," which ends with a recommendation that Sec. Daniels investigate how "famous Fiske letter was lost," etc.

June 15. . . . H. E. Coffin testified before Senate Military Committee that 600 million dollars will be needed for air craft—that *we should put our main effort there, etc.* I made this proposition to Aero Club about April 13, & it was endorsed by Board of Governors on April 16, sent to Prest., Cabinet Officers and Council National Defense & published in morning papers on April 19. *Wrote letter to Prest. Hawley, proposing air attack on Kiel and Wilhelmshaven.*

This letter read as follows:

June 15, 1917.

Referring to my letter to you of April 16th, 1917, in which I suggested sending to Europe a large unit of aeroplanes with trained aviators and appropriate armament; referring also to the favorable endorsement of this letter by the Board of Governors of April 16th, and referring also to the present proposition of the Aircraft Production Board of the Council of National Defense, which proposes similar action on a very large scale, I beg leave to submit to your attention the following facts:

1. By far the most immediate and alarming danger in the present situation is the menace to the food supply of England and France that is caused by the German submarine.
2. The most effective foe to the submarine is the aircraft; for flying over the long distances that seaplanes must traverse, considerable size and power are required.
3. The British torpedoplanes which sank four Turkish ships in the Sea of Marmora in August, 1915, were of considerable size and power; the German torpedoplanes which sank the British steamer *Gena* off the coast of England May 1, 1917, were also of considerable size and power.
4. The success of this attack without doubt encourages the Germans to develop the torpedoplane.
5. The German Naval General Staff realize the value of concentration of power and mobility in as large units as possible.

6. The torpedoplane embodies a greater concentration of power and mobility than does any other mechanism; for its cost, the torpedoplane is the most powerful and mobile weapon which exists at the present day.
7. An attack by a large number of German torpedoplanes armed with guns to defend themselves from fighting aeroplanes would be a powerful menace to the British fleet.
8. An attack by Allied torpedoplanes armed with guns to defend themselves from fighting aeroplanes would be a powerful menace to the German fleet, and if made in sufficient numbers, would give the Allies such unrestricted command of the North Sea, even of the shallow parts near the German coast, that German submarines would be prevented from coming out from German ports, the submarine menace abolished, and all chance of German success wiped out.

I beg leave also to point out that an inspection of the map of Europe shows that in air raids over the land, the strategical advantage lies with Germany, because her most important towns, like Berlin, are farther inland than the most important towns of the Allies, like London; so that aeroplanes of the Allies in order to reach Berlin would have to fly over greater distances while exposed to the fire of other aeroplanes than do aeroplanes of the Germans in going to London. For raids on naval vessels, however, the strategical advantage lies with the Allies because their control of the deep parts of the North Sea enables them to establish a temporary aeronautical base of mother ships sufficiently close to the German fleet to enable the British to launch a torpedoplane attack from it on the German fleet in Kiel and Wilhelmshaven, while the Germans could not possibly establish an aeronautical base sufficiently close to the British fleet. This gives the Allies the great advantage of the offensive. It would be possible, provided a distinct effort is made, for the Allies to send a large number of aeroplane mother ships to a point say 50 miles west of Heligoland; and for a large force of fighting aeroplanes and torpedoplanes to start from this place about two hours before dawn, reach Kiel Bay and Wilhelmshaven about dawn, attack the German fleets there, and sink the German ships. The distance from Heligoland to Kiel is about ninety land miles, and to Wilhelmshaven about forty-five.

Of course, the attack would be resisted by German aeroplanes, and fighting would be needed; but no war up to the present time

has been decided except by fighting, and in the present case, the Allies, now that the United States has joined them, could unquestionably put an overwhelming number of aeroplanes into the battle.

I beg leave to also call your attention to the fact that:

- (a) The successful attacks made by the Confederate ironclad *Merrimac* at Hampton Roads initiated a menace to the United States that caused terror through the North;
- (b) That this menace was obliterated twenty-four hours later by the *Monitor*;
- (c) That unless the *Monitor* had appeared, the *Merrimac* could have prevented the blockade of the southern coast, and therefore the collapse of the Confederacy;
- (d) That not only did the *Monitor* save the United States, but it saved the United States because it appeared *in time*;
- (e) That, if the *Monitor's* appearance had been deferred even one month, it would probably have been too late.

I beg leave to recommend that the Aero Club bring this matter to the attention of the proper persons. I need not say that the means I suggest should be merely additional to all other means, now used and proposed.

(Signed) BRADLEY A. FISKE,
Rear Admiral, U. S. N., Retired.

June 17. . . . N. Y. *Sun* has about 1500 words about the value of my torpedoplane.

June 18. . . . N. Y. morning papers say Prest. will ask for six hundred million dollars for aeroplanes, etc., and Sec. of War Baker endorses plan to send large force of aviators to Europe, following plan I proposed to Aero Club on Apr. 16, which was published in papers Apr. 19!

Apr. 19. N. Y. *Herald* is launching a big boom for American Aerial Supremacy, especially in hydroaeroplanes.

June 20. . . . I went out to Army Aviation field at Mineola, with Prest. Hawley of Aero Club, Woodhouse, and a dozen young French army aviators who have come to U. S. to teach our aviators. Then I attended meeting of Board of Governors of Aero Club, who considered my letter of June 15 to Prest. Hawley, endorsed it heartily, resolved to send copies to Congress & to give it to the press. Their resolution also recognized the fact that the present movement to send a large unit of aeroplanes,

etc., to Europe was in accordance with my proposal in my letter to Prest. Hawley, of April 16, 1917, which was approved by Governors, & published in newspapers on April 19!

June 23. . . . New York morning papers (except *Sun*) publish my letter of June 15 to Aero Club in which I recommend a big squadron of torpedoplanes, to attack Kiel & Wilhelmshaven.

June 24. . . . N. Y. *Herald & Times* have fine Aeronautical cartoons; other papers also show great interest.

June 25. . . . N. Y. *Times* has brief minor editorial in favor of my Kiel attack suggestion.

June 28. N. Y. *Times* has an editorial a column long, headed "The Torpedoplane" that is favorable in the highest way.

June 29. Carrie's birthday. . . . Wrote letter to Prest. Aero Club insisting on Air attack in Kiel, Wilhelmshaven, etc.

My letter read as follows:

NEW YORK, June 27th, 1917.

My dear Mr. Hawley:

Referring to my previous letters to you, which pointed out that the United States could give more effective aid to the Allies by means of aircraft than by any other means; referring to the statements that public officials have made during the last two weeks, which show a general approval of this idea; referring also to the fact that more attention has been attracted to the employment of aircraft over the land than to their employment over the water, I beg leave to state that in my opinion a grave mistake is being made in overlooking the importance of aerial operations against the German fleet and U-boat bases.

My opinion is based on the following considerations:

1. The danger on the sea threatens the Allies more immediately, vitally and intimately—than does the danger on the land, because it involves the commerce of the entire world and threatens soon to stop their supply of actual food and fuel. The danger on the land, great as it is, is not so great as it is on the sea, because it would take a longer time in which to bring about disaster and because the disaster would be more restricted as to locality and amount.

2. Although major operations on both land and sea are now practicable with aircraft, no successes on land which can reasonably be expected within the next twelve months would

weaken Germany much, whereas a successful attack on her fleet would ruin her.

Such an attack could be made within the next six months if adequate energy were employed.

3. A torpedo discharged from a torpedoplane at a ship has the whole length and underwater body of the ship as a target and is fired under conditions practically identical with the conditions under which it is fired from a destroyer; so that it is fired under the conditions for which it has been developed and in which naval officers have been trained. This means that if a torpedo is fired at a ship from a given distance it has a much greater chance of hitting that ship than would a bomb dropped from a height equal to that distance. Conversely, with any given chance of hitting, the torpedo could be discharged from a much greater distance than the height from which a bomb could be dropped.

I beg leave also to call your attention to the persistent demand of a large section of the British public, headed by Mr. Winston Spencer Churchill, for an attack against the German fleet. Up to the present time the British Admiralty has not thought that a successful attack could be made by naval vessels. In my opinion a successful attack could be made, with the assistance of torpedoplanes.

It is a matter of common knowledge that the oil supply of the British fleet is so seriously threatened that the use of her newest and best vessels, which burn oil exclusively, may soon become impossible. Before the shortage of oil becomes so great as actually to cripple the fleet would it not be wise to venture an attack, backed up by an overwhelming force of torpedoplanes, which contribute that freedom from danger from mines and submarines, which is the only element of success that is lacking now? In my judgment, this demands serious and prompt consideration.

I respectfully request that you bring this urgent question to the attention of the proper persons.

(Signed) B. A. FISKE,
Rear Admiral, U. S. N., Retired.

June 30. All N. Y. a. m. papers except *Times* published my letter, in full or in part. . . . Mr. H. F. Price wants to get up organization p.d.q. to manufacture torpedoplanes, inasmuch as Navy Dept. will not.

652 FROM MIDSHIPMAN TO REAR-ADMIRAL

July 2. . . . Park Benjamin has fine article in *Independent* on "Third Dimension in War," saying my torpedoplane is only remedy for submarine, etc.

July 3. . . . Arthur Pollen made speech in Washington last night, in which he declared subm. danger is the greatest peril and that all depends on us and Br. navies, and on the "headship" of those two navies!

July 5. . . . A. H. Pollen made long speech at Sherry's last night (I was there) in which he said no solution of U-boat problem is in sight, Admiralty has failed thus far, and U. S. must contribute a plan! *So far as I know, I am the only one on the Allies' side to contribute any plan whatever. The Allies have simply fought a defensive war on lines laid down by Germany.*

July 7. I went to Huntington Bay with Mr. Hawley and Mr. Woodhouse and inspected Navy Aviation Station there, the expenses of which are paid by private parties!!!

July 8. . . . N. Y. *Times* has editorial "Get the Aeroplanes Ready."

July 10. . . . *Herald* says Sec. Nav. now asks for 45 millions for naval aeronautics! Gosh. . . . If he had only followed my urgent recommendations to develop aeronautics when I was Aid for Operations, and his official military adviser! If he had only refrained from smashing the Division of Aeronautics that I had built up with so much labor!

Believing as I had done for seven years that aeronautics was to hold a tremendously important part in warfare, and realizing that everything which I had previously believed and urged regarding aeronautics had been more than verified by the events of the war in Europe, I noted with a stupefied feeling the fact that even after the United States had entered into the war the navy virtually ignored aeronautics. The action of the Secretary and Admiral Benson in their testimonies before Congress in 1916, belittling the advantages of aeronautics, were amazing enough to a man who felt as I did; but to note that no action was taken even *after* we had entered the war, was to feel that I was crazy or that some one else was. When we entered the war, the secre-

tary of the navy was authorized to expend one hundred and fifteen million dollars to put the navy into state of readiness for war. I looked in the papers carefully to see how much of this had been expended for aeronautics, but I could not see that a cent of it was so spent. If this were not the most inventive and industrial country in the world, if it were not that the aeroplane was invented here, and if it were not that the British and German navies had expended enormous sums for naval aeronautics, and were still expending enormous sums, I might have been able to understand it. But under the conditions as they actually were I could not understand at all the inaction of the navy in regard to aeronautics. If any lesson has been taught by history more clearly than any other lesson, if anything has been taught by the experience of business and of daily life, *it is that if one does not keep up with the procession he will be left behind.*

July 13. . . . I went to Keyport, N. J., with President Hawley to see test of torpedoplane, using dummy torpedo. Two men were carried besides the torpedo, and the seaplane could barely rise. The dummy was dropped once o. k.

July 20. N. Y. morning papers show that people at last appreciate the gravity of submarine situation. A N. Y. *Herald* reporter held interview with me, and is to send copy of interview to Sec. Navy, asking permission to publish it.

On July 21 *The Independent* published an article by me called "Naval Power and National Efficiency," which pointed out the absolute necessity of having our war preparations guided by men versed in strategy. One sentence read, "The conduct of war and the conduct of preparation for war are controlled by three agencies, strategy, logistics and invention."

July 24. . . . *Collier's* has an article by Carl Snyder, saying we must down the submarine *now*, and saying torpedoplane is to be a weapon more powerful than the submarine.

July 25. Had talk with Major Perfetti of Italian Flying Corps; he said Italy and Caproni will gladly do all I want with

654 FROM MIDSHIPMAN TO REAR-ADMIRAL

the Caproni triplane now coming to U. S. This is fine: I want to make it into a big torpedoplane!

July 30. Ensign Dodge (Ret) has come from Minneapolis, saying he has \$25,000 pledged, \$75,000 more in sight, to form torpedoplane unit.

Aug. 12. N. Y. *Herald* has picture and prophecy of usefulness of the Torpedoplane. . . . N. Y. *Sun* of Aug. 11 had picture Caproni triplane and prophecy of usefulness of giant aeroplane. Good.

Aug. 14. *Sci. American* August 11 has editorial saying that the position of Sec. Nav. is now almost most important in the whole world.

Aug. 15. Mailed to Mr. Hawley a letter as to use of powerful torpedoplanes, etc.

This letter was as follows:

JAMESTOWN, R. I., August 15, 1917.

My dear Mr. Hawley:

During the past five months I have had the honor of writing you a number of letters, which pointed out the capabilities of powerful aeroplanes for offensive use in war, the advisability of sending a large force of aeroplanes to Europe, the paramount menace of the submarine and the ability of aeronautics to overcome that menace.

The present war has shown such complete preparation, not only in material but also in strategic plan on the part of the Germans, and such a far-sighted view of the possibilities of submarines supported by mines and a fleet, that the desirability became obvious six months ago of replying with some unexpected method or device, which the Germans had not provided against in their plans.

The mere killing and wounding of individual men has never of itself determined the result of any modern war; because the men who are not killed or wounded were able to keep up fighting, if supplied with adequate food-fuel and munitions. What has decided the result of every modern war has been the shutting off of the means of effective fighting; sometimes by stopping the transportation of troops, food, fuel and munitions, and sometimes by the actual taking of the seat of government of one of the belligerents. In our Civil War, public attention was fastened

on the land battles, by reason of the number of men engaged in them, and the terrible destruction of life and limb. The land fighting kept up without decisive advantage to either side, until the naval blockade had seriously reduced the supplies that came from Europe; but as soon as the blockade had become effective in this way, the Confederate Army ran short of munitions and equipments, and could no longer fight effectively. Then the Confederate Army was defeated, and Richmond, the capital, lay defenseless before the troops of Grant.

In our war with Spain, the operations of the Army in Cuba and the Philippines exercised little influence on the outcome of the war; but the destruction of practically the entire Spanish Navy at Manila and Santiago left Spain so obviously exposed to blockade and attack by our fleet, that Spain gave up at once. In the war between Russia and Japan, tens of thousands of soldiers were killed and wounded in Manchuria, without apparent result; but as soon as the Russian fleet was destroyed in the naval battle of Tsushima, the Russians saw their inability to transport troops and munitions to invade the island empire of Japan, no matter how many Japanese soldiers they killed in Manchuria; and so they came to terms of peace. The battle of Tsushima had an effect curiously like Nelson's battle of Trafalgar, which prevented Napoleon from transporting troops and munitions to invade the island Kingdom of Great Britain.

In the present war, hundreds of thousands of soldiers have been killed and wounded in France, seemingly without effect; but the German submarine, without destroying many lives in comparison with the number of lives destroyed by the armies, has been effecting a continuous reduction in the means of transportation by which the Allies get the food, fuel and ammunition which they need to prosecute the war. Thus far, the submarine seems to have been a more potent factor in deciding the result of the war than all the armies on both sides. As in the wars just mentioned, it has been operations on the sea, not operations on land, that have been the most important factor.

The Navy of Germany has scarcely been attacked at all, although her navy is inconsiderable in comparison with her army, and although, if her navy were destroyed or even crippled, Germany's only hope of victory, the submarine, would be eliminated. Her navy has not been attacked, because it has been believed to be too heavily entrenched behind mines to justify an attack by

sea craft. This was skillfully arranged by Germany in the light of conditions as they were before the war.

But before the war, aeroplanes were small and unreliable, and the powerful bombing plane and torpedoplane had not shown their capabilities for offensive use, unhindered by mines and submarines. These weapons constitute a new and unexpected agency; so that we seem forced to the serious—the very serious—consideration of using them against the naval ships of Germany, now safely entrenched behind miles of mine fields, from which they send forth their submarines to destroy the commerce of the world.

I trust that you will agree with me in the ideas which I have just expressed, and that you will, whenever occasion warrants, bring them to the notice of influential people. Your position as President of the Aero Club of America, and the record of the Club for patriotic service of the highest order of disinterestedness and efficiency, mark you as especially fitted to bring before the people the ability of aeronautics to assist their cause.

With great esteem, I am,

Very sincerely yours,

(Signed) BRADLEY A. FISKE.

Aug. 17. Letter from Lieut. McDonnell at Huntington Bay says my dummy torpedo was successfully dropped from aeroplane Aug. 14.

Aug. 19. N. Y. *Herald* has full copy of my last letter (Aug. 15) to Mr. Hawley and *Tribune* has partial copy. I think N. Y. *American* has it too.

Aug. 21. . . . Went to Torpedo Station; find officers sympathetic as to Torpedoplane and wish to help. . . . *Life* has article by T. L. Masson, "A Message from the Air," urging America to wake and strike Germany through the air.

Aug. 24. Godfrey L. Cabot came from Wash. to see me and we talked after dinner. He brought letter of introduction from Senator Lodge and said he wants to help me financially and otherwise, to demonstrate practicability of torpedoplane. He is Lieutenant in U. S. Naval Flying Reserve.

Aug. 25. Mr. Cabot signed an "agreement," which I signed also, by which he obligates himself to the extent of \$30,000 to get a "Torpedo carrying seaplane"! This is patriotism of the first order! absolutely disinterested and fine! Telegram from Lord

Northcliffe saying wishes to see me week after my return to N. Y.

Aug. 31. Made short speech at entertainment in Newport for National Special Aid Society, which ended "We are at war with the incarnated combination of intellect and evil: we are at war with the Devil himself."

Sept. 3. Received notification from Aero Club of America that I have been elected a Governor!!!! . . . Engaged on article on Naval Strategy. My article "Air Power" comes out in *Naval Institute*.

Sept. 7. All N. Y. papers publish substance of the announcement of Mr. Cabot's gift of \$30,000 to torpedoplane development.

Sept. 8. Rec'd. copy of joint patent of Bradley A. Fiske and Elmer A. Sperry on "Automatic Gun Pointing." N. Y. *Sun* has bully editorial headed "The Monitor and the Torpedoplane," apropos of Mr. Cabot's gift and the fact that Ericsson—like me—had to get private capital to develop his invention.

Sept. 9. Mailed letter to Sec. recommending that Navy Dept. take the big Caproni triplane—soon to arrive here—and develop a powerful torpedoplane that can carry 2500 lb. torpedo.

This letter read as follows:

128 West 59th Street, New York, September 9, 1917.

From: Rear Admiral Bradley A. Fiske, U. S. N., Retired.

To: The Secretary of the Navy.

Subject: Powerful Torpedoplanes.

(1) The attention of the Department may have been called to the fact published in several newspapers that Mr. Godfrey L. Cabot, of Boston, placed \$30,000 at my disposal to be used for the construction of an aeroplane that could carry a torpedo powerful enough to sink a modern battleship. This act of Mr. Cabot was entirely unsolicited by me, and came as a great surprise. I had never met Mr. Cabot until he called on me and placed this money at my disposal about two weeks ago.

(2) I have talked with a great many naval officers, army officers, aviators, and other men in various walks of life about the torpedoplane, and they have all told me that they considered that the production of a torpedoplane holding a torpedo powerful enough to sink a battleship would be a step of the greatest importance to this country. Some of them thought that a fleet

of such torpedoplanes could successfully attack the German fleet at Kiel and Wilhelmshaven; some of them thought that such a plan was rather risky; but all of them thought that the torpedo-plane itself should be developed, either for use in Europe or for the protection of our own coasts.

(3) As the Department may remember, I have been engaged in developing a torpedoplane suitable for attack on destroyers, submarines and light craft generally; and the Department is doubtless aware that the British sank four Turkish vessels in August, 1915, and that the Germans sank the British merchant ship *Gena* on May 1st, 1917. There is no instance, as far as I know, of any torpedoplane being developed capable of carrying a full size torpedo; but I have heard well founded reports to the effect that the Germans were building 200 very large triplanes. In view of these facts, and in view of the further fact that all naval experience shows the value of designing new apparatus with sufficient strength and power, the conclusion seems unavoidable that the development of a powerful torpedoplane should be undertaken as soon as practicable.

(4) There will arrive in this country within a few days a Caproni triplane which seems ideal for this purpose. It is propelled by three motors, aggregating 600 H. P.; and it is said to be able to carry three men, three machine guns, and 2750 pounds of explosives for six hours, at a speed of nearly 80 miles an hour. I understand that this machine is to be sent to Langley Field, and that the Army is to make some tests with it.

(5) Major Perfetti, who is at the head of the Special Italian Commission for Aeronautics in the United States, wrote me a letter in which he said that he would instruct his staff to permit me to make any experiments that I might desire. This was very courteous on his part; but it occurs to me that the experimentation could be carried on more efficiently by the Navy Department than by myself. Any experimentation which I might do would be merely preliminary to what the Navy Department itself would subsequently do, in case it decided to take up the torpedoplane question seriously.

(6) I therefore venture to suggest that the Navy Department consider the question of fitting the Caproni triplane for carrying and launching a dummy torpedo weighing at least 2500 pounds, which is the weight, approximately, of a full power torpedo, and of conducting experiments like those re-

cently conducted at Huntington Bay with the small dummy torpedo. This work could easily be carried out by officers and men of the Navy who have been trained in aeronautics, and it would be of such a simple character that it would probably not interfere much with their regular work.

(7) I should much appreciate a reply to this letter, giving the views of the Department on this matter to such an extent as the Department may think advisable.

BRADLEY A. FISKE.

I have never received an answer to this letter.

CHAPTER XLIV

REJECTION OF THE TORPEDOPLANE WITHOUT TRIAL

SAYS my diary:

Sept. 12. By arrangement and in accordance with the desire expressed by Lord Northcliffe in telegram Aug. 25 I called on him in p. m. I stayed $\frac{3}{4}$ hour. Very interesting man. He gave me copy of an article by him in *World's Work* and a confidential letter to British Government about aerial transport, written in May. Said he believed in my torpedo-plane & bomb attack on Kiel, and said "I wish to God you could be in England now and stir them up."

Sept. 14. . . . The Caproni biplane 450 H. P. flew today and carried 15 people, including Mayor of Norfolk. I was notified of my election as Honorary Member of National Institute of Inventors. *Tribune* publishes (from *Naval Institute*) my entire article "Air Power" on editorial page.

Sept. 17. . . . Aeromarine Plane & Motor Co telephones that doubtful if they can go ahead with torpedo-plane *because of contracts with Navy and Army!* I fear that the attitude of Secretary towards me will block my efforts at bringing out a powerful torpedo-plane. My appreciation of Admiral Luce is published in September number of *Naval Institute*.

Sept. 18. . . . Attended lunch given by Lord Northcliffe in honor of Prime Minister New South Wales, Australia, 160 guests. . . . The chief guest made a very fine speech, fortifying himself with a stiff drink of whisky.

Sept. 19. . . . Meeting Governors of Aero Club. Rec'd \$100 check from Godfrey L. Cabot for travelling expenses, etc., etc.!

Sept. 20. At headquarters of Italian Aeronautical Commission; the two head men were away, but the next in rank thought it was decided that I should have loan of Caproni triplane, to try launching of 2500 lb. torpedo!

Sept. 22. Received letter from G. L. Cabot, enclosing copy

of letter from him to Aero Club, telling them to give me a \$1,000 check he had sent club, to be used for torpedoplane work.

Sept. 24. Bliss Co. agreed orally to make a wooden dummy torpedo and launching gear and as soon as I supply them with plans of aeroplane they will go on. Mr. Pamilio of Italian Commission on Aeronautics says he has no authority to promise that I can use a Caproni plane to try my torpedoplane experiments, but he agreed to send a cable to Major Perfetti in Italy, saying I want to have Caproni plane fly from New York to Hampton Roads and return, and drop a heavy Whitehead torpedo in Hudson River.

Sept. 27. Went to Washington night of 25th and returned this morning. Saw Italian 600 H. P. Biplane, examined it and saw it start for Norfolk. Benson, Capt Irwin (in charge of aviation under Benson) and Asst. Sec. Roosevelt each told me he had not seen my letter to Sec. of Sept. 9 about "Powerful Torpedoplanes" and expressed great surprise when I showed a copy of it to them. Navy seems to be doing only a very small fraction of the work on aeronautics that Army is doing.

Sept. 30. Frank M. Leavit and I went to Langley Field, Virginia, yesterday, and were very courteously received by the officer in command and by the Italian officers. Major Brown said he had orders from Signal Corps of Army in Washington to do everything he could, to help forward the torpedoplane experiments, and that he would put 50 men on the job if necessary. We all agreed that the Caproni biplane is not quite big enough to carry torpedo from England to Kiel & return to England, and that it would be better to fit the launching gear to the triplane that will be ready as soon as my dummy and launching gear are. So Leavitt is going to design both at once, and the Bliss Co. will make them.

Oct. 11. At work on "Naval Strategy." Army and Navy expanding rapidly, like balloons.

Oct. 13. . . . Letter from Glenn Curtiss (in reply to one from me) says he is designing seaplane for carrying torpedo, propelled by 1000 H. P. and will let me have figures in a week!

Oct. 16. German offensive at Riga is progressing dangerously. Capronis state one of their machines has flown 875 miles continuously with 3 passengers. Gabrielle d'Annunzio declares that, in recent raid on Cattaro the Italian aeroplanes

662 FROM MIDSHIPMAN TO REAR-ADMIRAL

flew more than 250 miles without landmarks and using aeroplanes fitted for land only—(not seaplanes evidently). These are two epochal statements.

Oct. 17. Received notice that I was again elected president of the Naval Institute. I received 695 votes, and ——— received 181 votes. This is my 7th election! Made open air speech (first time) before *oi polloi* in Madison Square, for benefit Liberty Loan.

Oct. 21. Sunday. *Times* has letter from London, saying fleet cannot take sub. bases because of mines, fortifications, etc. I wrote letter for ——— to sign tomorrow, saying Aeroplanes can do what *Times* says fleets cannot do. . . . The book, "For France" has come out, with short articles by 135 men and women; my article among them.

Oct. 23. . . . Letter from Comdr. Sypher says he did take my Unpreparedness letter of Nov. 9, 1914, out of Navy Dept files and give it to X who put it *in his pocket!*

Oct. 25. The rally at Carnegie Hall last night was great success; collected \$168,000. Chairman, in introducing me as speaker, said three men were the head of the Preparedness movement, Gen Wood, Theodore Roosevelt and Admiral Fiske. Godfrey L. Cabot called, and invited me to make speech at dinner Aero Club New England in Boston, Nov. 21. I accepted.

Oct. 26. Went to Bliss Co. factory with Cabot and saw 18" dummy steel torpedo and my launching gear. We are going to see it again Monday.

Oct. 27. . . . Letter from Glenn Curtiss says torpedoplane flying boat can be made to meet all my requirements, etc. Good.

Oct. 29. Comdr. Sypher writes me that my letter of Nov. 9, 1914, was returned to the Dept. files, and bore a receiving date of "September 13, 1916"!!!! Also that he knew nothing about Lodge asking for it until two months later, when he was in China.

Nov. 3. . . . Telephone message from Bliss Co. said the dummy 18 inch torpedo and launching gear would be shipped to Langley Field today.

Nov. 4. My dear father's birthday. Went to Trinity p. m. service with Jo, in uniform.

Nov. 12. . . . At Annual Meeting Aero Club, I was elected Third Vice Prest. & Governor. We drew up Resolution asking Congress to expend 2 Billions for Aeronautics.

Nov. 16. Spent Nov. 14 in Washington and Nov. 15 at the Army Aeronautic station at Langley Field.

Nov. 21. Went to Boston to give address before Aero Club of New England.

Nov. 24. Good news from France and Italy continues. Jo and I went to luncheon of League for Political Education and Jo stayed nearly three hours without much fatigue. I made brief speech suggesting "League for Strategical Education.

Nov. 26. . . . Benjamin telephoned Patent Office has granted the important claims in my application for patent on aeroplane microphone combination.

Nov. 28. Letter from Glenn Curtiss says "Work for the Navy Department has prevented considering our undertaking outside work: so that we have been obliged to let the matter of a design for torpedoplanes stand where it is."!! Pretty near a knock out for me.

Dec. 6. Made address at banquet of Economic Club on "Necessary Steps to Victory" that was well received.

Dec. 8. War declared on Austria. Truce or armistice between Germany and Russia also Rumania. Germans succeeding on both French and Italian fronts, due doubtless to freeing of troops on Russian front. Germans will probably make every effort to give Allies a knock out blow before U. S. can help. This shows awful folly of our delay in preparing, the delay beginning on Aug. 1, 1914.

I believe that the failure of the United States to begin to prepare for war as soon as the war broke out in Europe will go down in history as one of the most important facts of history. In all the United States there were only four men who came out plainly before the public and urged preparedness. These were Theodore Roosevelt, Representative Gardner, General Wood, and my humble self. Of these I believe I was the first to act, as I acted in the early forenoon of August 1, 1914. I followed this up with my letter to the Secretary of the Navy of November 9, 1914. Representative Gardner advocated the sub-

ject courageously and forcefully, but his efforts were somewhat handicapped by the unjust accusation that he was influenced by political motives, and that he knew nothing of the subject, anyhow. My official testimony, as senior adviser to the Secretary of the Navy, given before Congress, on December 17, 1914, contradicting the testimony of the Secretary and declaring that it would take at least five years to get the navy ready, was probably the thing which gave the preparedness movement its first real start. General Wood and I have paid for our activities in ways that I do not like to think about. Gardner paid for his with his life.

Dec. 10. Rec'd notice from Patent Office, via Park Benjamin that I must not communicate to anyone knowledge of the subject matter of my application for Patent on . . . filed May 23, 1917. This referred to my design whereby a dirigible balloon towed a boat, the boat towed a submerged microphone, & the observer in the dirigible heard sounds from a submarine through the microphone.

Dec. 12. Conditions same in Europe. Congress to investigate cause of poor equipment, etc., of Army—*when it is the fault of Congress* itself; ably assisted by Bryan, Carnegie & Jane Addams.

Dec. 14. . . . *The confusion that always attends haste* is now beginning to attract the attention of the public.

Dec. 15. Little change as yet. Allied Naval Conference to be established in Europe; U. S. to be represented by Benson and Sims. Navy Committee in House to investigate Navy is announced. How can Committee possibly find out anything, except that an enormous "expansion" has taken place; and much money spent for personnel and material.

Dec. 19. Conference in office of Ford Marine Instrument Co. with officer (Van Auken) from Bureau Ordnance, one from Bausch Lomb Co., Mr. Ford and me, endeavoring to devise plan to make horizometers that will fulfil desires of the service.

Dec. 20. Conditions little changed. Army investigation shows bad preparation. People seem *surprised!!!* And Germany has been preparing since 1640.

Dec. 21. . . . Prepared letter to President Aero Club.

My letter to the president of the Aero Club read as follows:

Dear Mr. Hawley:

New York, Dec. 23, 1917.

I beg leave to recall to your memory the various letters I have written to you during the year 1917, and to point out that the plan I suggested to you as soon as we entered the war and have urged upon you since of sending large units of aircraft to Europe has been approved in this country and abroad.

As the year is now nearly ended and as the question of using aircraft in large units is now occupying the public attention in a high degree, I beg leave to request that you will exert your influence as president of the Aero Club of America to impress the public with the fact that the project of using aircraft for major aerial operations is not a foolish notion of fanatics in aeronautics, but is a sound idea, based on the principles of strategy.

PARAMOUNT IMPORTANCE OF STRATEGY

The reason why it is necessary that any plan of operation should be based on the principles of strategy is *that strategy is the science and the art of planning and directing war*. The reason why Alexander conquered Darius three hundred years before the Christian era was the same as the reason why Prussia conquered France twenty-one centuries later, and why the various great commanders in the intervening years conquered their antagonists. The basic reason was not that the victors fought with the greater courage, or that they possessed the better weapons and equipments, but that they were directed by a more far-seeing and deep-thinking strategy.

"Strategy decides what is to be done. It has two assistants for doing afterwards the things decided on; one assistant is tactics, which actually fights each battle; the other assistant is logistics, which provides the weapons, ammunition, ships, men, transportation, equipments, food and money. An analogy may be pointed out between warfare and almost any other activity of men; for instance, the production of a play upon the stage—strategy having its counterpart in the play which is planned and written; tactics having its counterpart in the actual performance of the play by the actors; logistics having its counterpart in the work of the manager in providing the theatre, scenery, costumes, players and the money to pay the bills.

A regular formula for use in solving strategic problems was invented and developed by the German General Staff some years ago, and it has been adopted by the armies and navies of the world.

The problem is divided into four parts:

- (1) The mission, that is, the thing that ought to be done.
- (2) The difficulties in the way, such as the forces of the enemy and the efforts he will probably make.
- (3) Our means of accomplishing the mission and overcoming the forces of the enemy.
- (4) The decision.

If we try to utilize this formula in the present war we see at once that the "mission" is plain. It is to whip Germany.

When we come to the second part we see that we may divide the forces of our enemy into three parts: Germany's economic establishment, Germany's military establishment and Germany's naval establishment. These three establishments support the government of Germany, just as three legs support a stool. They are joined together and are mutually dependent as are the legs of a stool, but if any one is broken, the government must fall down.

If Germany's economic establishment is broken down, Germany cannot support the Army and Navy and therefore will have to give up; if her military establishment is broken down, the Allies can march to Berlin and compel Germany to give up; if her naval establishment is broken down, the Allies can form an impassable blockade around Germany which will shut off every means of communication with the outside world, even the means of submarines, and compel Germany to give up.

Coming to the third part of the problem, our facilities for accomplishing our mission against the opposing forces of Germany, we see that our means or facilities are the Army and Navy, backed by the enormous material resources of the United States. Naturally our Army would work with the Allied armies and our Navy with the Allied navies.

Coming to the fourth part, the decision, we see that it amounts to deciding what we, or rather the Allies, are to do with our Army and Navy against the German Army and Navy, and also what the other resources of the Allies can do against Germany's economic establishment. History shows that, in times of war, the best way to destroy the economic establishment of an enemy is

to use the destructive appliances of the Army and Navy which were designed and developed for that purpose. Such measures as embargo are extremely efficacious, but during actual war they have always been auxiliary to strategic measures.

In order to make a wise decision as to what are the necessary steps to fulfil the mission, let us consult our only guide for the future, which is the history of the past. If we do this we find that our question is very old, indeed, and that it has been answered many times. The answer has already been, "Battles; decisive battles."

WARS HAVE ALWAYS BEEN DECIDED BY BATTLES

If one reads history reflectively he becomes impressed not only with the enormous effect on history of battles, but also with the small number of them that were individually decisive, even when an actual victory was achieved by either side.

The most important book on this subject is "Creasy's Fifteen Decisive Battles of the World." In his preface, Creasy quotes Hallam as saying of the battle of Tours: "It may justly be reckoned among those few battles of which a contrary event would have essentially varied the drama of the world in all subsequent scenes."

Each one of the battles described brought about a decision that was momentous to mankind. *Each battle as fought by the victor was the carrying out of a distinct and brilliant plan previously conceived by the mind.* In no battle did the victor fight with a vague intention; in no battle did the victor fight unprepared; in no battle was the strategy of the victor faulty or short-sighted; in no case did the government behind the victorious side have an erroneous or incomplete idea of the military situation.

SUPERIOR DECISIVENESS OF NAVAL BATTLES

One fact stands out clearly, and that is the fact that as a general rule naval battles in which there was an actual victory were much more decisive of future results than similar land battles. This is probably because ships that are disabled or destroyed cannot be repaired so quickly as buildings and other land works can; and because sailors cannot be replaced as readily as soldiers.

The importance of naval battles was not realized until Mahan

made us realize it. Mahan has passed away, but the light he lit still shines. By this light we see that the military battle of Waterloo was not really so decisive as the naval battle of Trafalgar, although Waterloo was the culminating battle against Napoleon. The battle of Trafalgar bore the same relation to the battle of Waterloo that in a game of chess the move which precedes the announcement of "mate in (say) four moves" has to the last move of the game, which gives the culminating check-mate. When one player in a game of chess moves his piece and announces, "Mate in four moves," that move is the decisive move in the game and the subsequent move which finally check-mates the adversary is not the decisive move, although it is the culminating move. Nelson's victory at Trafalgar decided irrevocably that Napoleon's ambition for European dominion should end in failure, because it established the British navy as a permanent unbalanced force against him; the only unbalanced force among all the multifarious forces acting, the only force which Napoleon was powerless against. Trafalgar announced "mate in four moves" to Napoleon; Waterloo was the check-mate. Even if Napoleon had gained Waterloo, he would have eventually failed, for the reason that Great Britain could prevent that free movement of warships and merchant ships upon the sea without which no country can maintain even a mediocre place in the family of nations.

Even more clearly the battle between the *Monitor* and the *Merrimac* on March 9, 1862, and not the Battle of Gettysburg, was the decisive battle of our Civil War. Swinton points out in his "Twelve Decisive Battles of Our War" that a victory by the *Merrimac* would not only have raised the existing blockade of the southern coast, but would have given the South the entire control of Hampton Roads and Chesapeake Bay, the mouths of the James and Potomac rivers and the approaches from the south and east to Washington and Richmond, and would have endangered New York besides. Concluding a long and keen discussion of the results that would surely have followed a victory by the *Merrimac*, Swinton says: "The Confederacy would have received the alliance of one or both of those countries (meaning England and France) and the Republic would have been forever rent in twain."

The defeat of the *Merrimac* by the *Monitor* decided to which side victory would go, for the simple reason that it made it im-

possible for the South to get the necessary money, munitions and equipment with which to wage the war successfully. Even if the Confederacy had won at Gettysburg it would eventually have failed. The decision as to which side would win was given on the waters of Hampton Roads on the 9th of March, 1862, more than a year before Gettysburg was fought. Unfortunately this fact was not realized when the *Monitor's* victory was won, but now that we see that if it had been realized and if the North had merely held the Southern Army in check thereafter and had devoted its major attention to the Navy and to the maintenance by the Navy of a more vigorous blockade, the war would have been decided with immeasurably less loss of time and blood and suffering.

COMPARATIVE MERCIFULNESS OF NAVAL BATTLES

Our war with Spain was one of the most decisive wars that was ever waged; it was one of the most fruitful in permanent and great results, and yet the loss of time and blood was extremely small—smaller in proportion to the vast and permanent results achieved than in any war ever waged before. This was because it was a naval war, in which ships, which it is almost impossible to replace, were the targets for our guns, and not human beings which can easily be replaced.

A like truth may be stated about the war between Russia and Japan. Countless thousands were slain and wounded in the land battles of Manchuria, with little or no results that we can see, but the naval battle of Tsushima, with comparatively small loss of life, settled the whole question between Japan and Russia in one historic hour.

If the only way to win this war is to fight a long succession of enormous land battles, then we must fight them; but it may be advantageous to see if an alternative method less bloody but equally decisive can be devised. This idea seems worth thinking about, especially if we actually realize that the most decisive battles of history were not the most bloody; that some of them, like the battle of Santiago and the battle between the *Monitor* and the *Merrimac*, were comparatively bloodless, and that the battle of Manila did not cost a single life on the American side.

AEROPLANES CAN ATTACK WEAK POINTS

Careful reflection about the decisive battles of the world seems to show us that in every case a strong attack was made against a point that was comparatively weak and yet was vital. Noting this, does it not occur to us at once that Germany's weakest point is her navy, that it is vital, too, and that therefore we should make a strong attack upon it? Her naval power is now protected behind vast mine fields just as the garrison of a fort in the olden days was protected behind the thick walls of a fort. *But the walls of the fort, when they could not be broken through were climbed over with scaling ladders, and the German mine fields can likewise be flown over with aeroplanes.*

Some of these aeroplanes may be seaplanes that rise from North Sea waters, manned by navy men; while others may spring directly from the land, manned by army men. Coincidentally with these attacks, great divisions of army warplanes may attack the enemy's bridges, munition depots and railroads behind his trenches in France, and thus prevent him from concentrating all his aerial forces in defense of Kiel and Wilhelmshaven.

STRATEGIC VALUE OF NEW APPLIANCES

It may be objected that the adoption of this suggestion would involve attaching undue importance to a new mechanical appliance. In answer it may be pointed out that all weapons are mechanical appliances, and that some of the greatest successes in war have been gained by utilizing new mechanical appliances. In fact, the principal factors in whatever successes the Germans have attained have been the new mortars with which they battered in the tops of the Belgian forts, their novel appliances for trench fighting, and their unexpectedly efficient submarines.

It may also be pointed out that the aeroplane has established itself as a mechanical appliance of great reliability, that it can carry large destructive forces to strategic points more quickly than any other appliance can, that a squadron of Caproni aeroplanes recently made a flight of 875 miles without stopping, that the distance from England to Kiel and Wilhelmshaven is only 375 miles and 275 miles respectively, and that the distances to those places from Northeastern France are only 30 miles greater.

It may be at the present moment that there are no aeroplanes that are able to carry full-sized torpedoes from England to Kiel, discharge the torpedoes and return to England, but there are aeroplanes in existence that fall short of such an ability by only a small percentage. Certainly, therefore, if no such aeroplanes do exist, they can be made to exist, and I am informed that they can, by one of the most competent aeronautical engineers in the world.

It is instructive to recall the fact that of all the many factors that decided the result of the Russian-Japanese War the most important single factor was a new invention, the naval telescope sight—because it was the decisive Japanese victory at the naval battle of Tsushima that decided the outcome of the war by ruining every chance the Russians had of conquering Japan; because it was the enormous superiority in gunnery of the Japanese that gave the Japanese the victory, and because the enormous superiority in gunnery of the Japanese was due entirely to the fact that the Japanese guns were perfectly equipped with telescope sights, while the Russian guns were not.

This same naval telescope sight is the means with which every gun in every Allied vessel, no matter how large or how small, is directed against the submarine. It is the most efficient weapon yet brought to bear against the submarine.

THE GERMAN NAVY CAN BE SMASHED

Much hope is felt by the Allies now because of the apparent loss of effectiveness of the submarine attacks. Whether or not the submarine has been beaten, let us realize that the submarine is only one of many naval weapons, and that naval strategy recognizes the fact that so long as the enemy's fleet exists as a fighting force, so long as it remains what we call "a fleet in being," it constitutes a continuing menace, from which an attack of some kind may be expected at any time. For this reason, no mere subsidence of submarine activities should blind us to a desirability of sinking or disabling the German fleet.

Germany's entire fleet is concentrated in the region of Kiel and Wilhelmshaven. All her naval eggs are in one basket, and those eggs are vitally essential to her existence as a nation. It is my profound conviction that we can smash those eggs by torpedoplane and air-bomb attacks, if we prepare and deliver them on a scale sufficiently great.

If we do this, we shall win the latest decisive battle of the world and take the final necessary step to victory with the minimum expenditure of money and time and human life.

Respectfully,

(Signed) BRADLEY A. FISKE.

For this letter I received such a severe written reprimand from the Secretary of the Navy that I decided to desist for a while from further efforts to advance the development of aeronautics.

Jan. 11. . . . I went to Phila. Navy Yard and was very politely received by everybody. Naval Constructor Coburn, in charge of New Aeronautic construction factory there, said my scheme for launching torpedoes was thoroughly practicable as to the flying boats building there.

Jan. 16. Went to luncheon of Am. Defense Society at Union League Club. Sat at table of 6, with Col. Roosevelt, who was guest of honor, and had just accepted Hon. Presidency of Society.

Colonel Roosevelt made a brief speech, in which he said, in part, as follows:

Now, the next thing I am going to say—of course, I take it for granted that there will be no report made here that I do not see—want to say a word of Admiral Fiske, and I want not to hurt Admiral Fiske more than he has been hurt by his own courage and loyalty to the country. . . .

The Admiral is, with the sole exception of General Wood, the man who has suffered most from daring to tell the truth about our condition. Over three years ago, the Admiral made the first big move for improving the condition of the Navy by telling the truth about the Navy, and was punished mercilessly because he did tell the truth. Every American owes a real and great debt to the Admiral. He rendered a substantial, affirmative service to the people of the United States at great personal cost. I am glad to have a chance to pay a tribute to him in his presence, which I pay to Leonard Wood in his absence.

Jan. 17. I mailed to Sec. Nav. (Office Nav. Int.) an article asked for by *The Independent* on "What We Are Fighting For"—and asked permission to publish it. . . . I had shown

it to editor, Hamilton Holt, and he said he liked it very much.

Later, the permission was refused.

Jan. 19. . . . *The men now in authority are trying to do things Julius Caesar could not do in the time available.*

Jan. 22. Every paper and every speaker is shouting "speed up." We have speeded up so much already that we are like a crowd of people, "speeding up" to get out of a theatre; we are getting in each other's way.

Jan. 25. Received from Col. Roosevelt a copy of his book "Americanism & Preparedness," in which he does me the great honor to praise me several times. On the fly leaf is written "To Rear Admiral Bradley A. Fiske, with the gratitude and admiration of Theodore Roosevelt."

Jan. 26. Sent a letter to Sec. Nav. asking the Army be requested to try my 18 inch dummy torpedo from Caproni biplane, and let Navy observe the results.

This letter was simply following up my letter of September 9, 1917. It read as follows:

128 West 59th Street,
New York, Jan. 26, 1918.

From Rear Admiral B. A. Fiske, Retired,
To The Secretary of the Navy (Divisions of Operations).

Subject:—POWERFUL TORPEDOPLANES

Reference:—Rear Admiral Fiske's letter dated September 9th, 1917.

1. In accordance with an oral conversation held with the Chief of Naval Operations in his office on January 24, I called on the Chief Signal Officer of the Army. He was absent; but I had a satisfactory conversation with Colonel Deeds, who is in charge of the Equipment Division of the Signal Office.

2. I told Colonel Deeds that I had sent a dummy 18" torpedo, made of steel, with appropriate launching gear to Langley Field last Autumn ready for dropping from the Caproni triplane—which was wrecked later; that the dummy torpedo and launching gear were ready to be tried as soon as another large aeroplane was available; and that I was desirous of ascertaining whether the Army could provide such an Aeroplane. I also said that I had received the impression from the Chief of Naval Operations that the Navy would like to have a trial made of

674 FROM MIDSHIPMAN TO REAR-ADMIRAL

launching the 18" dummy torpedo from such an aeroplane, if such a trial could be conveniently brought about.

3. Colonel Deeds said that a large Caproni biplane was on its way to the United States; that it would be set up at the Aviation Field at Mineola, L. I., N. Y.; and that he thought it would be ready to fly in about eight (8) weeks.

4. He also said that he would be very glad to have the Caproni biplane used to try the experiment; and that he would either lend the biplane to the navy, or else would have the experiment made by army aviators accustomed to the machine, & let the navy make such observations of the results as the Secretary of the Navy might direct.

5. I therefore respectfully request that the Navy Department take such steps towards such a trial as the Secretary may deem best. If I may be permitted to make a suggestion, I would suggest that the Army be asked to conduct the trial along such lines as the navy may desire, and that navy officers observe whatever results occur.

B. A. FISKE.

Jan. 30. . . . Godfrey L. Cabot came up to my apartment, and we discussed a paper I had written to Bu. Ordnance, about "Comparative Effectiveness of Torpedoplanes and Bomb Dropping Aeroplanes." This paper proved by mathematics and the principles of Gunnery that torpedoplanes are more accurate and destructive.

Feb. 5. Received back from Washington the Ms. that I sent, on "What We Are Fighting For" (requested by Liberty Loan Committee)—*not* giving permission to publish it!

Feb. 6. Submitted preface for second edition of my book to Scribners, and Foreword for "Sea Power & Freedom," asked for by the Putnams.

Feb. 8. . . . Theodore Roosevelt is declared in "Serious condition." "Flying" (American) is out with big front page illustration showing Kaiser falling off 3-legged stool, because one leg (Navy) is being torpedoplaned. This is to illustrate my argument made in letter to Hawley, of December 23.

Feb. 9. Roosevelt improving. I sent in to Scribners my preface for the second edition of "The Navy as a Fighting Machine."

Feb. 13. I was elected President of the Army and Navy Club of New York today.

REJECTION OF THE TORPEDOPLANE 675

Feb. 15. Married 36 years ago today! Called on Mr. H. C. Ford of Ford Marine Instrument Co., and suggested that he leave out of new model horisometer all additions outside of angle measurement, and simply transmit to the plotting room the angle—in either vertical or horizontal plane. Mr. Ford was delighted—very much so, and said he would take up the scheme at once. At last I see a reason to expect that the plan I have urged ever since I wrote “Courage and Prudence” in 1907 and suggested the “plotting room” will be carried out.

Feb. 20. Bolsheviki govt. has made peace with Germany paying 4 billion dollars, ceding certain Baltic provinces, etc! The pacifistic attitude of the Bolsheviki, and the licking they are *therefore* receiving, is a lesson for our pacifists, and *is the kind of a result that Army and Navy officers have always predicted* for pacifistic nations, that leave their money out on the counter, without any protection.

Feb. 21. Germany apparently is going to conquer Russia. Germany commands “air” near American lines!!! I feared this would occur; in fact I knew that our inaction would cause just such a situation.

Feb. 25. The N. Y. *Times* has an editorial lauding Secretary Daniels. Good: but if I had not brought about certain measures that he opposed with all the force of his authority, he would now be more condemned by the public than Sec. War Alger was in Spanish War.

Mar. 8. Letter from Major (Dr.) H. C. Coe in London says Vice Admiral Sims, in a conversation with him, gave me “all the credit for putting the U. S. Navy on the basis such as we have today,” etc.

On May 21 I received the following letter from Secretary Daniels in answer to my letter of January 26, 1918. It killed all my hopes of utilizing the torpedoplane in the war:

676 FROM MIDSHIPMAN TO REAR-ADMIRAL

COPY

Address reply to
THE SECRETARY OF THE NAVY
And refer to initials
and No.

6-EB

Op. Air—
0146-153

WSB

NAVY DEPARTMENT
Washington

May 20, 1918.

From: Secretary of the Navy.

To: Rear Admiral B. A. Fiske (Retired)

SUBJECT: Powerful Torpedoplanes.

Reference: (a) Your letter dated January 26, 1918.

1. The proposed suggestion by you of launching torpedoes from aircraft has been studied in connection with experiments which have been carried on by the allied powers, and the following results and decisions have been determined:

- (a) From experiments it has been proved that torpedoes can be launched from aircraft. This must be done, however, at an altitude not in excess of fifteen feet. At this altitude one thing must be guarded against, namely, the rebounding of the torpedoes which sometimes strike the tail of the aircraft resulting in a crash.
- (b) The feasibility of this form of attack in the face of offensive gun fire is doubted, for even should the aircraft escape, the aim would seldom be accurate due to confusion of the operators.
- (c) As the enemy's ships are not operating on the high seas the only way to reach them would be to attack them at their bases. These bases are located well within defenses, and heavy aircraft capable of carrying torpedoes would not be able to penetrate the enemy's defenses guarding these bases. Hence, it is not deemed practicable to attempt such offensive operations.
- (d) Experiments along this line have already been tried and discarded by the Allied Powers in Europe and the possibility of obtaining satisfactory results from the proposed scheme is so slight as not to warrant the expenditure of the time and talent required for its development.

(Signed) JOSEPHUS DANIELS.

CHAPTER XLV

THE TRIUMPH OF THE TORPEDOPLANE, FUTURE GLORY OF AMERICA, GOLD MEDAL

ON June 15 I received the following letter from the president of the Aero Club of America:

THE AERO CLUB OF AMERICA
297 Madison Avenue

New York, June 13, 1918. .

Rear Admiral Bradley A. Fiske, U.S.N.,
128 West 59th Street,
New York City.

My dear Admiral Fiske:

Permit me to take advantage of the occasion of your 64th birthday to extend my cordial congratulations, and at the same time, to thank you, on behalf of the Aero Club of America, for the assistance you have given to naval and military aeronautics.

You have done more for these causes than any other man in the United States. You were the first man in the world to point out the possibilities of the aeroplane for major operations; and you have persistently called attention to them since 1911. You were the first man, after we entered the war, to publicly urge sending a large aeroplane force to Europe; and your endorsement, as a strategist, of the efforts of this Club to secure large appropriations for aeronautics, was a potent force with Congress.

Your official testimony before Congress on December 17, 1914, and on March 24, 1916, showed a clearer vision of the necessity for immediately developing aeronautics and strongly encouraging aeronautic manufacturers, than any other official showed. Unfortunately, your wise recommendations were not heeded until after we had actually entered the war. If they had been acted on when you made them, the United States would have been able to send an overwhelming force of aeroplanes to the assistance

of the Allies immediately after we entered the war, and German submarines would not now be defying our navy on our own coast.

Navy officers tell me that you have done more to strengthen the navy than any other man in our history, and that you did it mainly (though not wholly) by your electrical inventions and gunnery inventions, and by establishing the general staff methods, by which our navy is now handled. I know, of my own knowledge, that you did more than anyone else to bring about its use of aeroplanes and dirigibles; and I believe that, since the first of August, 1914, you have shown a clearer understanding of the situation as a whole, and of the measures we ought to take, to secure victory, than any other man in the United States.

The navy appreciates your work, as it has shown by electing you President of the Naval Institute seven times in succession. Predicting that the country also will appreciate your work, as soon as the country learns to understand it, I am ever

Faithfully yours,

(Signed) ALAN R. HAWLEY,
President, Aero Club of America.

After the United States had entered into the war a period of great confusion and hurry ensued, in which many hundreds of millions of money were appropriated by Congress, with the cordial approval of the people, in a determined endeavor to save the world from the catastrophe which their own short-sightedness threatened to create. Both political parties rallied to the support of the Government, men occupying the most important and lucrative positions in business and professional life gave their services for nominal salaries, and enormous organizations for manufacturing supplies of all kinds and transporting them to Europe soon resulted. After the nation had realized its folly and the possible fruits, the inborn genius of the American asserted itself. The expense involved was tremendous, and so was the waste; but the wastage was due not to inefficiency then, but to short-sightedness before.

Because aeronautics was a new art compared with the other arts brought into requisition, such as the arts of

gun-building and ship construction, less useful work in ending the war was done by aeronautics on the part of America, than by the other agencies. I lost flesh that I could not spare in fruitless exasperation, and in imagining what would have happened if the earnest recommendations which I made when I testified before the naval committee on March 24, 1916, had been followed. It seemed to me that if they had been followed, we could have entered the war ready to furnish immediate aeronautical aid; and I said to myself that, if my work in establishing the Division of Aeronautics when I was aid for operations had been continued, if, in fact, the Division of Aeronautics had not been actually abolished, we could have started flotillas of bombing-machines and torpedoplanes across the ocean on April 7, 1917. In fact, I could hardly avoid the conviction that, if we had gone ahead as we were going aeronautically when I left office on May 11, 1915, Germany would have known it, and would not then have been such a fool as to adopt her policy of ruthless submarine warfare in defiance of the repeated warnings of the United States. *Germany went into the war because she thought she saw an opportunity; and she defied the United States because she thought the United States would not fight, and could not fight effectively if she would. What Germany failed to realize was that the guiding genius of the American people was not William J. Bryan, but Theodore Roosevelt.*

During the months of June and July I made occasional trips to Washington and to the aircraft factory in Philadelphia in the endeavor to get permission to have one of the large flying-boats then under construction, fitted as an experimental torpedoplane. I also worked with the Aero Club in their endeavors to have transatlantic flight attempted. On July 19 I had one of the joyful surprises of my life. Says my diary:

July 19. I was in Washington yesterday. I saw a dispatch from Admiral Sims, dated July 10, saying that 150 seaplanes,

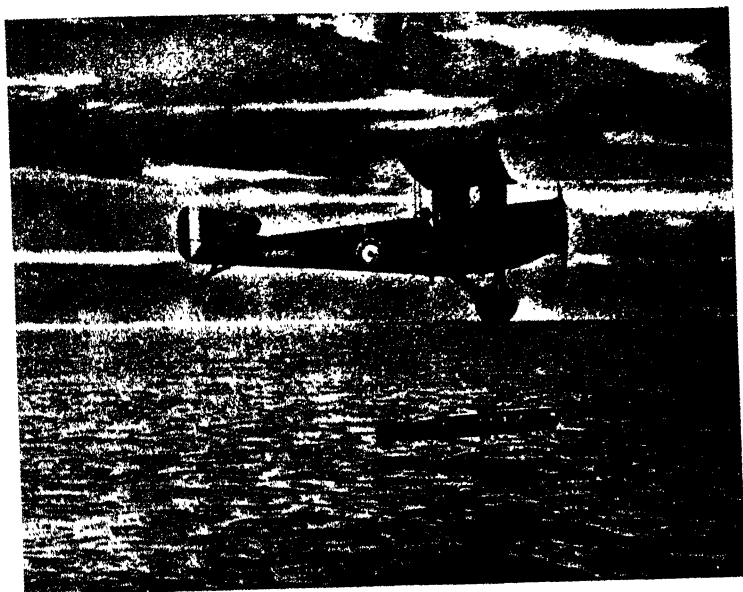
fitted to carry and launch 1000 lb. torpedoes (torpedoplanes) had been ordered by the British Admiralty! Captain —— showed me the telegram, and naval constructor Hunsacker spoke of it to me afterwards! Isn't it distressing that the British Navy should do this, when our Navy Department has not only done nothing to develop the torpedoplane, but actually and affirmatively rejected it, in a letter to me signed by the Secretary of the Navy, dated May 20, 1918! My case is worse than General Wood's.

July 20. . . . nominations are out for officers of Naval Institute. I am the only nominee for president; and yet the rules say the Board of Control must nominate three.

Aug. 1. Germany seems tired out. Crisis seems to have been her recent defeats in the latter part of July.

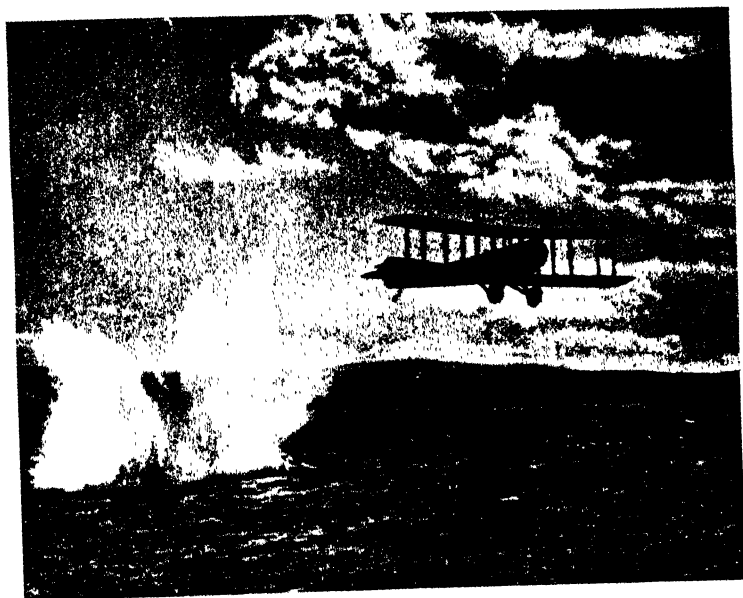
From this time forward German retreats followed in rapid succession. On November 11 an armistice was signed, and the war virtually ended.

This caused great rejoicing among all the Allied nations; but it brought me face to face with the fact that I had not been officially employed during the entire war, though I had made official application for duty, and many retired rear-admirals older than I had been employed, who had not had as complete and varied experience as I. No reason (I mean, of course, no good reason) for not employing me occurred to me; for I had served efficiently in all the grades of the navy, both in peace and in war, had successfully filled the highest position a navy officer can fill, had twice been member of the General Board, had established the system under which the Navy Department was handled throughout the war, and had invented more successful naval and military appliances than any other man in the world. I had not even been put on the Navy Consulting Board, which had been established for the purpose of developing inventions, and which I myself had suggested for the Secretary! Several of its members told me that I ought to be on the board; in fact, the head of it. At the risk of appearing conceited, but in order to make my point clear, I beg leave to state that on the occasion of a



Courtesy of Illustrated London News & R. F. A.

Before it enters the water



Courtesy of Illustrated London News & R. F. A.

The torpedo hitting the water with the torpedoplane out of danger from the splash
A TORPEDO BEING LAUNCHED FROM A TORPEDOPLANE

large celebration at Elizabethport, New Jersey, on July 6, 1918, when the first large Handley-Page machine was flown, I mistakenly entered a room in which I found a number of men seated at a long table. No sooner had I entered than these men applauded, and the chairman rose and asked me to sit by him, and then to "make a few remarks." To my amazement I found that I had unwittingly intruded on a conference of the Navy Consulting Board.

August 2. Called on Morgan Shuster, president Century Company. We agreed orally that the Century Company will publish my book at a time to be agreed on later.

The book referred to is this one.

During the months of June, July, and August, German submarines off the coast of the United States sank many vessels, one of which was the United States armored cruiser *San Diego*. The German submarines seemed to do as they pleased, for the only effective defense against them, considering the great area over which they worked, would have been aeroplanes, and we had almost no aeroplanes ready, though many were now under construction. The last sinking occurred about August 27. I believe. It seems probable that all German submarines were called home shortly after this. Possibly, it was that they might take part in a naval offensive; but this naval offensive never took place, because the German fleet mutinied. Shortly after this mutiny Germany declared her willingness to sign an armistice. Whether the willingness to sign the armistice was a direct effect of the mutiny I do not, of course, know; but it is obvious that it would have been foolish for Germany to continue the war after her fleet had mutinied. As I pointed out in my letter to the president of the Aero Club, dated December 23, 1917, the government of every maritime nation is like a three-legged stool, in that it rests on three supports, any one of which being knocked out, the structure must come down. In the case of a maritime nation, these sup-

ports are the economic establishment, the army, and the navy.

The noblest man this country has produced since Washington, died on January 6, 1919. It will be one of the consolations of my declining days that during the last year of his life Theodore Roosevelt honored me several times with expressions of his esteem. I owe to him more than to any other man except my father whatever desires I have ever had to live a manly life, and whatever small measure of success I may have had in living it. In a sordid generation Theodore Roosevelt shone like a star of magnanimity and lofty aspiration.

In the latter part of 1918, it became known that the British fleet had realized for a year the danger of torpedoplane attacks upon it, and that the navy had taken measures on a tremendous scale for making just such torpedoplane and bombing attacks on Kiel and Wilhelms-haven as I had urged in June, 1917, and afterwards.

It became known also that, after trying various modifications, the British had finally adopted the apparatus and the method of using it that were specifically illustrated and described in my patent, so that no "developing" had been required. It is extremely rare that an invention that is really new, is "right the first time." My stadimeter and torpedoplane were virtually so.

In March, 1918, Henry Woodhouse wrote an article for the United States Naval Institute called "The Torpedoplane." It was accepted by the Board of Control, but they had to refer it to the Navy Department for permission to publish. As there was some delay in passing the censor's office, I went to Washington and represented the matter to Assistant-Secretary Roosevelt, then Acting Secretary. As Mr. Roosevelt had been continuously doing all he could to advance the cause of aeronautics, including the torpedoplane, and as there was nothing in the article which could give any information to any foreign government, Mr. Roosevelt finally approved the publication of the article with a few minor omissions. The ar-

ticle appeared in the May number of the Institute Proceedings and disclosed the fact that the Italians, Germans, and British had been experimenting with the torpedo-plane since 1914. The successes of the Germans and British in sinking vessels were mentioned, and the following statements from English papers were quoted:

The mystery aeroplanes of the British Navy, which during the fighting were one of its most jealously guarded secrets, have been specially described by an expert who has had full opportunities for studying the craft.

The mystery aeroplane was designed to do from the air more effectively and more swiftly the work formerly allotted to our torpedo-boats. The enemy had devised such successful protection of harbors and ships against our torpedo-boats and submarines that it was only with the gravest risk that we could approach within 30 miles of Kiel and other German fortified ports. But for the newest peril the enemy had no reply.

The news of our discovery of a means of attack that was immune from mine dangers and too swift in its operation to be held off by gunfire reached the ears of the enemy, and it is believed, in one quarter at least, to have helped the Huns to the decision of surrender.

Among the many new devices which the armistice prevented the Royal Air Force from putting into use against the enemy was the torpedo-aeroplane. It is considered to be of even greater potential value than the submarine, and would doubtless have proved astonishingly efficient. The enemy has good reason to be thankful for having escaped this new offensive weapon, which was ready for active service only a little while before the cessation of hostilities. The torpedo-aeroplane is a development of the torpedo-carriers, which were first successfully employed in action by the R. N. A. S. at the Dardanelles in 1915, and were subsequently used against us by the Germans in 1917, when they were thus enabled to sink three of our merchant ships off the South-East Coast. The torpedo carried by torpedo-aeroplanes is of a small size as modern torpedoes go, and weighs half a ton.

Had not hostilities ceased so suddenly, these machines would have operated effectively against Kiel harbor and the German warships in their lair. The efficacy of the weapons will be real-

ized when the operation is explained. One of these mystery aeroplanes, espying its enemy, makes a sudden dive from the clouds at 150 miles an hour, levels out at 50 feet above the surface, discharges a torpedo directly at the enemy ship at the right moment, after which the pilot pulls back his joy-stick and disappears into the clouds as suddenly as he appeared. The operation is so swift that the enemy has little chance of training a gun on the assailant. In one of these attacks a British airman torpedoed and sank a Turkish troopship containing 3000 troops.

When the German fleet surrendered, an aeroplane "mother-ship" with 20 of these machines in its bosom met the Huns 50 miles out at sea, and had any tricks been tried it would have been simple work for a score of mystery aeroplanes to have leapt into the air and torpedoed the best part of the ships. This mystery or "Cuckoo" aeroplane—so called because of its weakness for laying eggs in other people's nests—is one further testimony to British engineering ability and resourcefulness of our navy.

Mr. Woodhouse's article aroused considerable attention and caused many comments in the public press. Regret was expressed, and amazement too, that our Navy Department had permitted foreign governments exclusively to bring into practical use an invention so unmistakably American. It was pointed out that, if my recommendations had been followed the United States could have had "flotillas of torpedoplanes" ready when the war broke out, but that, on the contrary, not one American torpedo-plane existed.

Stress was laid on the fact, also, that the Navy Department had had placed at its disposal almost unlimited resources, money and facilities for trying new inventions; that it had spent great sums in trying to develop the inventions of certain other inventors and yet that it had refused to try mine at all, although, as an editorial in the *New York Herald* expressed it, "its originator, Rear Admiral Fiske, has probably invented more successful naval and military inventions than any other man in history."

This expression in the *Herald* seems at first glance to be exaggerated, but I am under the impression that it is correct. This is not because I have made so many successful naval and military inventions, but because other men have made so few. I am quite familiar with the history of weapons, and I do not know of any other man who has invented so many important weapons as I have. When one considers what a tremendously important part weapons have played in the long conflict between civilization and barbarism, the sterility of invention in the matter of weapons is a fruitful source of wonderment. This remark is especially true in regard to inventions that made really long steps beyond previous inventions; for most inventions have merely followed a very gradual and slow course of improvement over existing methods and apparatus. The introduction into Europe of the tube, containing gunpowder and a ball, so arranged that the gunpowder could be ignited and made to project the ball, was a long step and not a short one; but since that time I do not know of any military or naval invention which has made a very long step unless it shall be found that the torpedoplane has done so. It may be found that the invention of the torpedoplane was the longest single step made in warfare since the invention of the gun. The combination of the most powerful weapon with the speediest means of transportation is an agency of war whose importance a prophet is not needed to discern.

I realize that I am a biassed witness in this case, and that I am exposing myself to ridicule by this remark. But possibly an inventor will be leniently dealt with, even if he does exaggerate the importance of his own invention; and if so, I respectfully request lenient treatment. If this request be granted, I should like to add that if the torpedoplane makes that change in naval warfare which many naval officers besides myself predict, it will tend to increase enormously the power of the United States relatively to other countries. The reason is that no other

nation possesses so great inventive genius, and holds within its own territory such a concentration of mechanical and industrial resources and ability, such enormous forests of wood suitable for aeroplanes, and so many harbors adaptable as bases of departure and return for air craft of all kinds. I have long predicted that the grand future of aeronautics is not to be on the land, but on the sea. The reason for this is that three quarters of the surface of the earth is covered by the sea; and that, in order to traverse the great distances required in flying over water from one country to another, much more powerful aeroplanes will be required than for flying over the comparatively small stretches of the land.

Surely a new era can be made to dawn for the United States of America. The pre-eminent inventive genius of its people, their wealth and their initiative, enable them (if they will) to invent, to produce and to employ better air-craft and more air-craft than any other people can, and thereby to exercise an influence more widespread and profound than any other nation has ever exercised in history.

Says my diary—

“July 19. Returned from week at Newport. Met many officers of all grades. Sims and Asst. Sec. Roosevelt admired for their ability and still more for their honorableness.

“July 20. . . . *The Electrical Experimenter* for August has a long and fully illustrated account and description of the torpedoplane and also of the ‘Fiske Submarine Spotter,’ that is of my patent for detecting submarines by microphones that are suspended under boats that are towed by dirigibles, each microphone being in telephone circuit with an observer in the dirigible. This plan was used but in a modified and comparatively inefficient form in the North Sea during the war. Received letter from President Aero Club notifying me that I had been awarded Gold Medal for invention of torpedoplane.”

The letter of presentation read as follows:

THE AERO CLUB OF AMERICA,
297 MADISON AVENUE,
NEW YORK, August 1st, 1919.

Rear Admiral B. A. Fiske,
128 West 59th Street,
New York.

MY DEAR ADMIRAL FISKE:

In accordance with the decision of the Board of Governors, and in obedience to a Resolution passed by its executive committee on July 9th, on behalf of the Club, I take great pleasure in sending you the Gold Medal of the Aero Club of America, in recognition of your invention of the Torpedoplane. This is the highest honor we can confer, and we esteem it a privilege to confer it on so worthy a recipient and for so brilliant an achievement.

The Aero Club congratulates you on having made this valuable invention. It laments the fact, however, that you were not given any opportunity to develop it yourself, though other inventors of far less fame, and without any of your expert knowledge of naval requirements, were assisted during the war with large sums of money by the Navy Department; and it doubly laments the fact that our Navy Department officially rejected it, and permitted Great Britain and Germany to secure the entire credit for putting it into practice.

The Aero Club realizes also that your carefully prepared plans to build up Naval Aeronautics made while you were Aid for Operations in 1913, 1914 and 1915, were not carried out after you resigned your position, and that a great national opportunity was thereby lost. It was deplorable that the Administration of the Navy Department lacked your vision. The consequences were injurious and far reaching.

Had the urgent recommendations been followed which you made officially to Congress March 24 and 26, 1916, and which are a matter of record, this country could have sent flotillas of dirigibles, bombing aeroplanes and torpedoplanes to Europe as soon as we entered the war; and the measures to destroy the naval forces and naval bases at Kiel and Wilhelmshaven which you urged in the summer of 1917, and which were in actual course of preparation in the Autumn of 1918, when the Armistice was signed, could have been carried out shortly after we entered the war. The result would undoubtedly have been an

earlier ending of the war, much saving of life, suffering and money, and a wonderful enhancing of the glory of the United States.

Sincerely yours,

ALAN R. HAWLEY,
President.

The British navy had succeeded, by the spring of 1918, in bringing the torpedoplane to a thoroughly practical stage, both in construction and in operation; they have now developed successful torpedo target-practice, not only with single torpedoplanes, but with squadrons of them; and, both in construction and in operation, they have followed with extraordinary closeness the description and illustrations embodied in my application for patent, that was published when the patent was granted, in July, 1912.

The British have constructed airplane carriers, two of which go at a very high speed, and are to carry twenty torpedoplanes each.

By doing these things, the British navy has *already* achieved a superiority over the American navy in the air greater than the superiority it holds on the water, and has gained a start that it will probably be impossible for us to overcome.

As the inventor of the torpedoplane, and as an American officer, I may perhaps be pardoned if I express my chagrin that a condition so wholly deplorable and so easily preventable should have been permitted to come to pass.

INDEX

A

Administrative Plan, 540, 579, 583, 597
 Aero Club of America, 594, 632
 "Aeronautics in War," 642
 Aeroplane Flight, 509
 Aguinaldo, 271
 Aid for Education, 548
 Aid for Operations, 526
 "Alfonso the Last," 258
 Allderdice, Winslow, 28, 91
 Alumni Association of Speech, 489, 590
 American Defense Society, 615, 618, 634
 Arlington, 502
 Army and Navy Joint Board, 538
Army and Navy Journal, 612
 Artificial Horizon, 50

B

Badger, C. J., 523, 542, 562, 598
 Balabac, 324
 Barker, A. S., 345
 Barr and Stroud Range Finder, 152, 359, 407
 Barry, David, 583
 Barton, E. M., 231
 Bates, General, 336
 Battle of Manila, 241 *et seq.*
 Bausch and Lomb Company, 575
 Bay View Hotel, 491
 Beauregard, Augustin, 426
 Bell, Franklin, 279
 Benham, Admiral, 187
 Benjamin, Park, 71, 212, 376, 553, 652
 Benson, W. S., 584 *et seq.*, 599, 618-621, 626
 Bigelow, Poultney, 620
 Bliss Company, 329
 Board for Testing Inventions, 580
 Boat Detaching Apparatus, 40, 61
 Borneo, 330 *et seq.*
 Boston *Transcript*, 630
 Bowyer, J. M., 491
 Bradford, Royal B., 84, 380
 Brashear, J. A., 482
 Breech-loading Musket, 69
 Bristol, Mark, 538, 551
 Britten, Fred A., 596, 601

Browning Gun, 116
 Brownson, W. H., 189, 407
 Brumby, Thomas, 58, 281
 Bryan, W. J., 207, 535
 Buenos Aires, 470
 Bunce, F. M., 341
 Bureau of Ordnance, 78
 Burgess, W. Starling, 507

C

Cabot, Godfrey L., 656 *et seq.*
 Canet, Gustave, 138
 Cap Brun, 157
 Cape Melville, 324
 Cape Pillar, 465
 Caproni, 653
 Captain's Cruise, 417
 Capture of Manila City, 275
 Castilla, 247
 Century Company, 681
 Chadwick, F. E., 128, 362
 Chandler, Secretary, 80
 Chester, Colby, 510
 Chicago *Tribune*, 596
 Chichester, Sir Edward, 271
 Chief of Naval Operations, 567 *et seq.*, 599
 Christina, 247
 "Civilian Electrician in Modern War," 239
 Clarke, George R., 548
 Cleveland, President, 190
 Coburn, Constructor, 672
 Coe, Dr. H. C., 622, 675
 Coffin, H. E., 647
 Cole, W. C., 353
Collier's, 596, 653
 Commercial Club of Chicago, 596
 Commodore W. and Commodore M., 122
 "Compromiseless Ships," 375
 Conference Committee on Preparedness, 624
 Cooper, Ensign, 387
 Coquimbo, 432
 Costa Rica, 440
 Cotten, Lieutenant Commander, 574
 Couden, A. R., 41
 "Courage and Prudence," 412
 Course Indicator, 413
 Cramp's Shipyard, 363
 Cronan, W. P., 552, 554 *et seq.*, 567

Custance, Admiral Sir Reginald,
645
Curtiss, Glenn H., 661
Cuxhaven, 628

D

Daniels, Secretary, 530 *et seq.*
Davis, C. H., 533
"Defending America with Torpedo-
planes," 644
Dentist, Painless, 183
Depth Bomb, 591
Dewa, Admiral, 574
Dewey, George, 240, 302, 350, 475
Dirigible and Microphone, 664
Division of Aeronautics, 652
Dorn, E. J., 9
Dunne, F. P. ("Mr. Dooley"), 597
Dutton, E. P., 625
Dynamite Gun, 110

E

Eckert, General, 104
Electrical Exhibition, 89 *et seq.*
Electrical Society, 638
Electrical Ammunition Hoist, 117
et seq.
Electric Engine Telegraph, 209 *et seq.*
Electric Gun Training, 118
"Electricity and Electrical Engi-
neering," 76
"Electricity in Naval Life," 215
"Electricity in Warfare," 129
Electric Locomotive Headlight, 91
Electric Log, 48, 61
Electric Printing Telegraph, 103
Electric Railway, 92
Electric Range Finder, 110, 119,
156, 359
Electric Range Indicator, 158
Electric Training Gear, 198
Elevations Indicator, 153, 187
Elliott Bros., 134 *et seq.*, 151
Engineering, 376
Evans, Robley D., 161
"Explosion of Mr. John Ashburton,"
234

F

Farmer, M. G., 40
Fermier, 285, 289
Filipino War, 293 *et seq.*
Fillebrown, Captain, 52
Finley, John, 521
First Division, 517
First Telephone Installation on
Board Ship, 131 *et seq.*

Fiske's Letter to Senate, 613
Fiske, Mrs., 290, 294, 582
Fletcher, F. F., 478, 542, 562
Flying-Fish Torpedo, 553
Folger, W. F., 128
Foote, Commodore, 541
Fort Hamilton, 214, 345
Fort San Antonio, 278

G

Gardner, A. P., 552, 562, 607
Garrison, Secretary, 598
General Board, 350, 476, 544, 491
General Electric Company, 199
General Staff, 398
"German Torpedoplane sinks Brit-
ish Ship, 644
Gherardi, Bancroft, 25, 47, 60, 184
Gherardi, Walter, 51
Gill, C. C., 493
Gilmore, James, 322
Gleaves, Albert, 170
Gold Medal from Aero Club, 687
Gold Medal from Franklin Insti-
tute, 185
Gold Medal from Naval Institute,
371
Goodrich, Caspar F., 115
"Great Illusion," 538
Gun Director System, 126
Guy, George H., 635

H

Hall, Mrs., 290, 298
Hall, R. T., 244
Hammond, Dr. Graeme, 217, 617
Hammond, John Hays, 231
Harper, Josephine, 51, 63
Hawley, Allan R., 608, 642, 688
Hazing, 10
Helm Indicator, 209
Hendrick, Burton J., 620
H. M. S. *Galatea*, 523
H. M. S. *Immortalité*, 271
Hobson, Richmond P., 551, 564, 567
Holmes, Ralston, 429
Holt, Hamilton, 673
Hood, John, 585
Horizometer, 410 *et seq.*, 575, 581,
620
Howard, Thomas B., 416, 477, 498,
584
Howe, Ensign, 387
Hughes, C. F., 433
Hughes, E. M., 224, 244
Hunsacker, Midshipman, 403
Hunt, Secretary, 80
Hurricane at Havana, 394
Hutchinson, Miller Reese, 590-590

I

Il Terribile, 149
Independent, The, 653
 Institute of Social Sciences, 550
 Invention and Experiment Board,
 399

J

Janasuki, 383
 Japanese Embassy, 574
 Jeffers, W. N., 39
 Jolo, 320

K

Kaempffert, Waldemar, 488
 Kagayan Sulu, 335
 Kalakaua, 23
 Kaufman, Surgeon, 429
 Kelley, J. D. J., 645
 Key West, 499, 513
 Kiel, 567
 Kilanea Volcano, 28
 Knapp, H. S., 545, 549, 567, 581
 Knight, Austin, 422, 440, 532, 545,
 552
 Knox, Dudley, 567, 575
 Knox, P. C., 495, 501

L

Labuan, 331 *et seq.*
 Lambertson, Captain, 262
 "Land Battleship," 488, 594, 623
 Lansing, Robert, 551, 553, 579
 Leave in Europe, 133 *et seq.*
 Leave of Absence, 73
 Leavitt, Frank M., 339 *et seq.*
 Le Breton, Lieutenant Commander,
 609
Le Formidable, 140 *et seq.*
 Letter from Aero Club presenting
 Gold Medal, 687
 Letter Recommending Air Attack
 on Kiel, 648
 Letter Recommending Sending Bat-
 tle Planes to Europe, 643
 Letter to Aero Club Recommending
 Battle Planes, 633
 Letter to Secretary Urging Power-
 ful Torpedoplanes (No. 1), 657
 Letter to Secretary Urging Power-
 ful Torpedoplanes (No. 2), 673
 Letter Urging Air Attack on Kiel
 (No. 1), 654
 Letter Urging Air Attack on Kiel
 (No. 2), 665
 Lentze, Eugene, 278
 Life, 598

Lima, 439
 Lodge, Henry Cabot, 607, 615
 Luce, S. B., 106 *et seq.*, 220, 351,
 370, 535, 537
 Lumsden, Surgeon, 391

M

Machine gun, 40
 Madison, Zachariah, 477, 520, 552,
 554
 Magellan, Strait of, 165
 Mahan, A. T., 106 *et seq.*, 363, 483,
 535, 560
 Marriage, 68
 Marshall, Edward 521
 Marshall, Vice-President, 615
 Masson, T. L., 656
 "Mastery of the World," 590
 Maxwell, W. J., 525
 McCalla, B. H., 52 *et seq.*, 76
 McCommon, Ensign, 387
 McLean, Ridley, 427
 "Mean Point of Impact," 515
 Megaphone, 86
 Memorial Parade, 502
 Method of Pointing Guns at Sea,
 125
 Meyer, Secretary, 458, 526, 530
 Michelson, A. A., 15, 535
 "Militarism vs. Politics," 374
 "Modern Electrician in Time of
 War," 130
Monitor and Merrimac, 511
 Monsoon, 307 *et seq.*
 Montgomery, Ensign, 250
 Moore, John Bassett, 553
 Morgenthau, Henry, 204
 Moros, 320
 Morrell, Henry, 407
 Morton, J. P., 316
 Mustin, Midshipman, 341

N

Nanshan, 240
 National Security League, 630
 Naval Academy, 8
 Naval Advisory Board, 79
 "Naval Battle of the Future," 129
 Naval Consulting Board, 588
 "Naval Defence," 593
 Naval Gun Foundry Board, 79
 Naval Institute, 215, 371, 412, 425,
 491, 521, 534, 599
 "Naval Policy," 593
 "Naval Power," 483
 "Naval Preparedness," 593
 "Naval Principles," 593
 "Naval Profession," 398, 460
 "Naval Strategy," 599

Naval Telescope Sight, 127
 Naval War College, 220
 Navy League, 607
 Newberry, Secretary, 457
 Night signalling, 55
North American Review, 593, 596
 Northcliffe, Lord, 478, 657
 Noyes, Leigh, 552
N. Y. American, 606
N. Y. Herald, 602, 606
N. Y. Navy Yard, 46
N. Y. Sun, 603
N. Y. Times, 606, 616
N. Y. Tribune, 606
N. Y. World, 603, 616

O

O'Lachlan, Callan, 574
 O'Neill, Charles, 346, 361
 Osterhaus, Hugo, 494, 523, 602
 Outbreak of War, 545

P

Padgett, Lemuel, 540
 Page, G. W., 507
 Paranaque, 312 *et seq.*
 Peek, 332
 Pelletan, Camille, 142
 Periscope, 412
 Peters, George H., 16, 38, 377
 Pirate Ship, *Bradley A. Fiske*, 404
 Plotting Room, 412
 Plotting System, 482
 Politics vs. Militarism, 374
 Pollen, A. H., 652
Popular Science Monthly, 92, 488
 Potter, W. P., 458
 Potts, T. M., 479, 502, 531
 "Prepare or Perish," 630
 President's Letter to American Defense Society, 617
 Pribyloff Islands, 175
 Prince Henry, 270, 272
 Prism System of Target Practice, 520
 Prize Essay, 371
 "Proof of the Preparedness of the Navy," 562
 Puerto Militar, 470
 Punta Arenas, 467

R

Ramsay, Frank, 163, 185, 198, 216, 220
 Range and Position Finder, 131, 214
 Reid, Whitelaw, 523

Rejection of Torpedoplane, 660 *et seq.*
 Relative Importance of "Turret and Telescope Sight," 511
 Reports on Telescope Sight, Range Finder, and Range Indicators, 192 *et seq.*
 Reprimand, 594
 Republican Club, 629
 Rescue at Sea, 385 *et seq.*
 Resignation as Aid for Operations, 581
 Reuter dahl, Henry, 607
 Roberts, Congressman, 565
 Roberts, Lord, 546
 Robeson, Secretary, 80
 Rodgers, John A., 377
 Rodgers, T. S., 365
 Roosevelt, Assistant Secretary, 540, 563, 584, 682
 Roosevelt, Theodore, 347, 384, 524, 597, 615, 624, 672
 Root, Elihu, 630
 Russell, Frank, 493, 514
 Russell, W. W., 494

S

Saegmuller, George N., 376, 575
 Safety League, 562
 Sampson, W. T., 184, 198, 362
 Sandakan, 330
 San Domingo, 494
 Sandy Point, 467
 Satterlee, Herbert L., 635
 Schley, 165 *et seq.*
 Schroeder, Seton, 113-115
 Scott, Sir Percy, 126, 352, 411, 436
 Seal Islands, 175
 "Sea Power and Freedom," 674
 Sebree, Uriel, 417 *et seq.*
 Secretary's Letter to Senate, 610
 Seibels, George, 224, 236, 244
 Semaphore, 218 *et seq.*, 341, 351, 367
 Sherman, W. T., 362
 Sherrill, Charles, 471
 Shoemaker, Captain, 543, 545
 Shufeldt, R. W., 45
 Sims, W. S., 347, 352, 355, 411, 675
 Smith, James T., 463
 Smith, Roy, 552, 555
 Smith, Lieut., 408
 Snyder, Carl, 653
 Solenoid Whistle, 341
 Sounding Machine, 219, 225
 Special Aid Society, 639
 Sperry, Charles S., 325, 331
 Sperry, Elmer E., 444, 520
 Sprague, F. J., 535

Standley, W. H., 222
 Stanworth, Lieutenant Commander,
 387
 Stadimeter, 208
 Staunton, Sidney A., 455
 Stickney, Joseph, 262
 Stimson, Secretary, 630
 Stirling, Yates, 402 *et seq.*
 Stokes-Fiske, 80
 Strategic War Problems for Fleet,
 587
 Strauss, Joseph, 347, 591
 Sultana of Sulu, 329
 Sultan of Sulu, 330
 Sulu, 320, 327
 Swift Board, 560
 Swift, William, 458
 Swinburne, W. T., 408
 Sypher, Commander, 662

T

Taft, President, 525, 592
 Takeuchi, Captain, 574
 Tanks, 594
 Tappan, Benjamin, 278
 Taylor, H. C., 65, 220, 350, 370,
 371, 535
 Taylor, David, 575, 591
 Tactical Drills and Fleet Tactics,
 350
 Telescope mount, 344
 Telescope sight, 127, 213
 first trial, 171
 second trial, 177
 Tesla, Nikola, 231
 Testimony before House Naval Com-
 mittee, 565, 599
 Testimony before Senate Naval
 Committee, 413
 Thayer, H. B., 204, 230, 341, 535
 "The Invention and Development of
 the Naval Telescope Sight," 436
 "The Naval Profession," 460
 "The Navy as a Fighting Ma-
 chine," 624
 Third division, 507
 Thompson, Col. R. M., 607
 Tillman, Senator, 615
 "To Adjust Range Finders before
 Battle," 427
 Toboga Bill, 464
 Torpedoplane, 505 *et seq.*
 Torpedoplaning Turkish Transport,
 598
 Torpedo, Superheated, 340
 Torpedo Turbine Driven, 340
 Trials of Telescope Sight, 191 *et seq.*
 Triumph of the Torpedoplane, 677
 Tsushima, Battle of, 512

Turret Range Finder, 358 *et seq.*,
 400, 406 *et seq.*, 481
 Typewriter, 38

U

Unalga Pass, 182
 "Uncle Sam and Aunt Elizabeth,"
 630
 United States Declares War, 632
 Unpreparedness Letter, 555
 Unpreparedness of the Navy, 546
 et seq.
 U. S. Revenue Cutter *McCulloch*
 U. S. S. *Alabama*, 342
 Baltimore, 122, 240
 Boston, 288
 Charleston, 278
 Concord, 240
 Colorado, 47
 Georgia, 507
 Illinois, 407
 Kearsarge, 342
 Maine, 240, 361
 Massachusetts, 344
 Mayflower, 384
 Minnesota, 68
 Monadnock, 293 *et seq.*
 Monterey, 278
 Olympia, 240, 293
 Powhatan, 51
 Petrel, 203, 223, 240
 Plymouth, 42
 Raleigh, 240
 Scorpion, 598
 South Dakota, 458
 Tennessee, 417 *et seq.*
 Vesuvius, 111
 Yorktown, 317

V

Van Nostrand, Charles B., 376
 Veracity, Question of, 616
 Vreeland, Charles, 491, 526

W

Wainwright, Richard, 458, 475, 491,
 542, 602
 Walker, John G., 84
 War College, 533, 544
 Ward, Aaron, 458
 Ward, Leonard, 199
 War Game, 584
 War Plans, 574 *et seq.*
 "War's Most Important Hint to
 Us," 631
 War Staff, 553
 Washington *Post*, 596
 Watson, J. C., 337, 192 *et seq.*

- Weaver, General, 541
Weeks, Senator, 541
Western Electric Company, 341
Whitney, Secretary, 87
Wiley, Captain, 621
Williams, Dion, 489
Williams, G. W., 400
Winslow, Cameron, 583
Wireless Experiments, 99
Wood, E. P., 241 *et seq.*, 275 *et seq.*
Wood Henry A. Wise, 642
Woodhouse, Henry, 627, 642, 682
Wood, Leonard, 541, 662
Wood, Spencer, 519
World's Work, 620, 629

